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2002

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de Waal, A. A. (2002). *The role of behavioral factors in the successful implementation and use of performance management systems*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam].

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THE ROLE OF BEHAVIORAL FACTORS IN THE SUCCESSFUL IMPLEMENTATION AND USE OF PERFORMANCE MANAGEMENT SYSTEMS

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VRIJE UNIVERSITEIT AMSTERDAM

THE ROLE OF BEHAVIORAL FACTORS IN THE SUCCESSFUL IMPLEMENTATION AND USE OF PERFORMANCE MANAGEMENT SYSTEMS

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor aan
de Vrije Universiteit te Amsterdam,
op gezag van de rector magnificus
prof. dr. T. Sminia,
in het openbaar te verdedigen
ten overstaan van de promotiecommissie
van de faculteit der Economische Wetenschappen en Bedrijfskunde
op dinsdag 9 april 2002 om 15:45 uur
in de aula van de universiteit,
De Boelelaan 1105

door

Antonie Adriaan de Waal

geboren te Rotterdam

Promoter: prof. dr. P.G.W. Jansen
Promoter: prof. dr. T.L.C.M. Groot

Acknowledgements

When it takes close to seven years to finalize a dissertation, there are many people to be thankful to for their help and support during this time period. I am most grateful to Professor Paul Jansen who, as my promoter, never lost faith in a successful ending of this endeavor. His optimism and input is greatly valued. I also very much appreciated the help received from the Free University Amsterdam, in the persons of Professor Tom Groot, as second promoter, and of Peter Dekker and Maarten Gelderman. I thank you all for your many valuable insights, advice and help with the statistical calculations.

Many students were, as part of their Master's study, willing to support me by performing field work and writing excellent papers: Karian Schroën, Anita Bots, Roel Rietkerk, Hans Bruijn, Beatrice van der Kamp (all from Free University Amsterdam), Maarten Heere (Leiden University), and Irene Paritsis (City University Business School London).

Many former colleagues of Andersen have contributed to the research that was done over the past years. Special mention deserves Henk Bulthuis, who performed phase I together with me. His contribution has been invaluable, and I owe him many thanks. Tamira van Vught, Paul Geusgens, Megan Salch, and Karin Scheffers helped in various aspects, such as proof-reading, interviewing managers, coaching students and making the dissertation layout.

I also thank my family members, who always were optimistic about a good ending. I especially thank my wife Linda for her mental support and for her accurate proofreading, which made this dissertation much more accurate and readable. Also thanks to my brother Martin for the magnificent cartoon.

And, last but not least, I owe special thanks to all the organizations that participated in the case study research of phase I and the survey of phase II. Without your cooperation and support this research project would never have been possible. I hope that the research results described in this dissertation are as valuable to you as your contributions have been to my PhD study. Thank you!

André A. de Waal
Leiden, February 2002

Contents

1 Introduction

The importance of performance management systems for an efficient and effective management information supply in an organization has increased over the last decade (Kaplan and Norton, 1996). In order for the organization to be able to handle the continuous increase in information (Shapiro and Varian, 1999) and to be successful in turbulent environments (Lobo et al., 2000), organizations need an efficient performance management system. At the same time, the roles of change management and managerial behavior in change processes have become more visible (Senge, 1994). Implementing a new performance management system is often a major change for an organization. It therefore stands to reason that managerial behavior and style should also play a prominent role during the implementation and use of such a system (Holloway et al., 1995; Van Egten, 1996; Vosselman, 1999; Simons, 2000). This dissertation investigates the role of managerial behavior in the successful implementation and use of a performance management system.

During many of the projects I performed as a consultant, I was able to observe firsthand how important the role of managerial behavior and style could be. During one of these projects I decided to take a closer, more scientific look at managerial behavior, after a conversation I had with the CEO of the organization at which I had helped to implement a new performance management system. We were discussing how the organization was getting along with the new performance management system. The CEO was complaining that one manager in particular was not using the new system at all. I interrupted him and said: "Let me guess, you mean Mr. X." The CEO reacted with surprise: "You are right. How did you know?" I explained to him that I had gotten to know Mr. X during the interviews and workshops I had conducted with the management team. All those times, Mr. X, who was the creative director of the organization, had been very enthusiastic about the new performance management system – it appealed to his sense of creativity – and he had been heavily involved in the implementation. But now that the performance management system was finalized and in operation, the novelty had worn off and he was no longer interested.
In contrast, his colleague Mr. Y, the operations director, took a long time to realize the added value of the new performance management system. But as soon as the system was operational, Mr. Y turned out to be a real advocate, as it fit his need for control. I was able to make a calculated guess because I knew both persons and had observed their behavior. At that time, I thought to myself: Wouldn't it be great if you could, during the implementation of a new performance management system, predict beforehand which person would be using the system and which one would not? Then, you could tailor the project approach and tailor the new system to take these differences in managers' behaviors and styles into account. At that moment, I decided to start researching the behavioral aspects of managers in relation to the use of a new performance management system.

1.1 INTRODUCTION TO THE STUDY

Simons (2000) defines performance measurement and control systems as formal, information-based routines and procedures that managers use to maintain or alter patterns in organizational activities. These systems focus on conveying financial and nonfinancial information that influence decision making and managerial action. The recording, analysis and distribution of this information is embedded in the processes of the organization, and is often based on predetermined practices at preset times in the business cycle. Performance management systems are designed specifically to be used by managers. Zairi and Jarrar (2000) state that the main reason for managers to use a performance management system is to influence the behavior of subordinates. To do so successfully, managers need a clear view of human nature and behavior. In this respect, Hartmann (2000) and Vagneur and Peiperl (2000) mention the need for identification of the personality factors that are important for managerial behavior and attitudinal reactions to performance management systems. This need for more knowledge about performance management systems ties in with the view of Neely (2000), who states that there is a natural evolutionary cycle at work in the development of theory and practice in the field of performance management systems. At first, organizations realized they were measuring the wrong things (late 1980s and early 1990s), after that organizations adopted and implemented new and alternative performance management systems (the 1990s), and finally organizations asked the question how to use the data provided by the new performance management system (late 1990s and the beginning of the twentyfirst century).

Performance can be considered an outcome of both organizational and human activities. Originally, performance measures were used as surrogates for performance outcomes, and a direct link between performance management systems, human nature, and outcomes was not made. This shortcoming was addressed by Argyris (1952)[1] and later on by Simon et al. (1954). They explored the human behavioral side of performance management system use, looking specifically at the budgeting system. Both concluded that budgets and budgeting processes could be associated with important human relation problems. These included job-related tension, worker–management separation, and cross-boundary conflict. Their conclusions were substantial departures from the mechanistic approach to performance measurement found in traditional management theory. Since then, the issue of the human behavioral side received more attention in the literature, although a lot of this attention is still focused on its relationship to the budgeting system.

In recent years, an increasing number of organizations have implemented a performance management system that is based on critical success factors (CSFs) and key performance indicators (KPIs). A frequently used format in this context is the balanced scorecard (BSC) (Kaplan and Norton, 1996). Despite the increase in experience gained with these systems, there is still a lot to be learned about the factors that influence the everyday use of a performance management system (Vosselman, 1999b). Most research in the field of performance management systems has been focused on the technicalities of implementing a performance management system, rather than on management and human behavior issues (Martins, 2000). As a

[1] Vagneur, K. and M. Peiperl (2000), "Reconsidering performance evaluative style", *Accounting, Organisations, and Society*, 25, referring to: Argyris, C. (1952),*The impact of budgets on people*, The Controllership Foundation, Cornell University

consequence, the role of managerial behavior in the use of a performance management system has thus been underexposed in previous research (Vagneur and Peiperl, 2000; Krause, 2000).
Two recent studies into the behavioral aspects of performance management system implementation and performance management system use aim at filling this void. Lipe and Salterio (2000) found that managers' cognitive limitations may prevent organizations to fully benefit from a performance management system, and that cognitive differences between managers may result in different use of the performance management system. Malina and Selto (2000) found that positive outcomes from performance management system use were mostly determined by the effectiveness by which it was used as a management control device (defined in terms of effective measurement, comprehensive performance, and weight of the measurement dimensions), and that these outcomes were not attributable to its use as a communication device. Positive outcomes were generated when behavior of employees was aligned with strategy and when employees were motivated. This indicated the existence of causal relationships between performance management system design, management control use, managerial and employee behavior, and performance.

In this dissertation, the line of research into the behavioral aspects of performance management system implementation and use is followed by addressing the following research question:

> *Which behavioral factors contribute to the successful implementation and use of a performance management system?*

This question is answered by analyzing three organizations that have designed and implemented a new performance management system. The design and implementation of a new performance management system is regarded successful when managers use these systems on a daily basis. The research aims to identify the behavioral factors that are important to this success. Many behavioral factors have been suggested in both scientific and professional literature. Examples are: "Managers accept the need for performance management" and "Managers accept the promoter".

In phase I of this study, case study research was conducted at three Dutch organizations: a nonprofit organization, a profit company, and an organization in transition from nonprofit to profit. These organizations all had, at the time of the research, extensive experience with a performance management system. Generally, in a performance management system implementation project, three stages can be distinguished. In the starting stage, an organization takes the decision to implement a performance management system. In the development stage, customized CSFs, KPIs, and a BSC are developed. In the use stage, an organization starts to use the performance management system. In each stage, identification of those behavioral factors that were the most important to a successful conclusion of that stage took place. In addition, the stage that was the most important to the regular use of the performance management system was identified.
The research results indicate that, contrary to expectations, the way in which the starting stage and the development stage were carried out, appeared to be nondecisive for the daily use of the performance management system after its implementation. The results also indicate that 18 specific behavioral factors do appear to be important for the day-to-day use of the performance management system.

It also became clear in phase I that there seemed to be a relationship between the success of a performance management system (in terms of frequent daily use) and the attitude of managers toward a performance management system. This corresponds with the findings of Malina and Selto (2000) as well as Lipe and Salterio (2000). As the aspects of cognitive and interpersonal abilities of managers and types of performance management system use were not explicitly taken into account during phase I of this study, and because it seemed these were important to a successful performance management system, it was decided to start a second study phase, which concentrated on the correlations between performance management system use, management styles, and organizational performance. Phase I focused on the organization and its situation and strategy, which are all short term aspects. Phase II focused on personal characteristics of individuals in different settings (organizations), which are long term aspects.

Management styles are composed of the cognitive and interpersonal abilities of managers and become apparent in individual competencies and observable behaviors of managers. In this respect, a competence is a feature of an individual that has a causal relationship with effective and/or excellent behavior at performing a certain task or in a certain situation (Boyatzis and McBer, 1982; Merchant, 1998; Mitranis et al., 1992). Management styles are considered one of the important and permanent drivers of managerial behavior. Developers and users of performance management systems should take these management styles into account when they are developing and implementing a new system.

The research in phase II focused strictly on observable behavior. The objective of this phase was to find answers to the following research questions:

A. *Which management styles are related to which types of performance management system use?*
B. *Do specific management styles and types of performance management system use have an effect on organizational performance*?

In phase II, several hypotheses, based mainly on literature on applied research into performance management systems, were drafted about the relationships between managerial styles, types of performance management system use, and organizational performance. These hypotheses were tested, using a self-constructed questionnaire, at 12 (mainly) international organizations that had experience with a performance management system.

The results of phase II indicate that differences in types of performance management system use can (at least partly) be explained by differences in management styles as well as by differences in type of organizations (profit versus nonprofit and manufacturing versus nonmanufacturing). The results also indicate that the use of a performance management system raises the productivity and the overall quality of an organization; that one specific management style, namely that of being flexible and adapting easily to different organizational circumstances, increases the quality of the work delivered; and that the management style of teamwork and cooperation increases the productivity.
The implication of the study findings is that further research in behavioral factors, types of performance management system use, types of organizations, and management styles is recommended, to strengthen the frequent, day-to-day use of a performance management system and to improve organizational results.

1.2 STUDY SCOPE AND CONTRIBUTION

The scope of the study is depicted in Exhibit 1.1. In phase I, behavioral factors important for the successful implementation and use of a performance management system, as given in the literature, are identified. Answering the research question requires identification of criteria that denote whether the performance management system has been *successfully* implemented and is regularly used. These so-called criteria for regular use denote whether the use of the performance management system is of value to the organization and its managers. In case study research the behavioral factors important for successful performance management system use are identified.
During phase I, it became apparent that many of the important behavioral factors are in some way related to management styles and observable behavior of managers. For this reason, in phase II of the study, it is investigated which management styles of a manager are important for which specific type of performance management system use. The objective of phase II is also to identify whether specific management styles and specific types of performance management system use improve the performance of an organization.

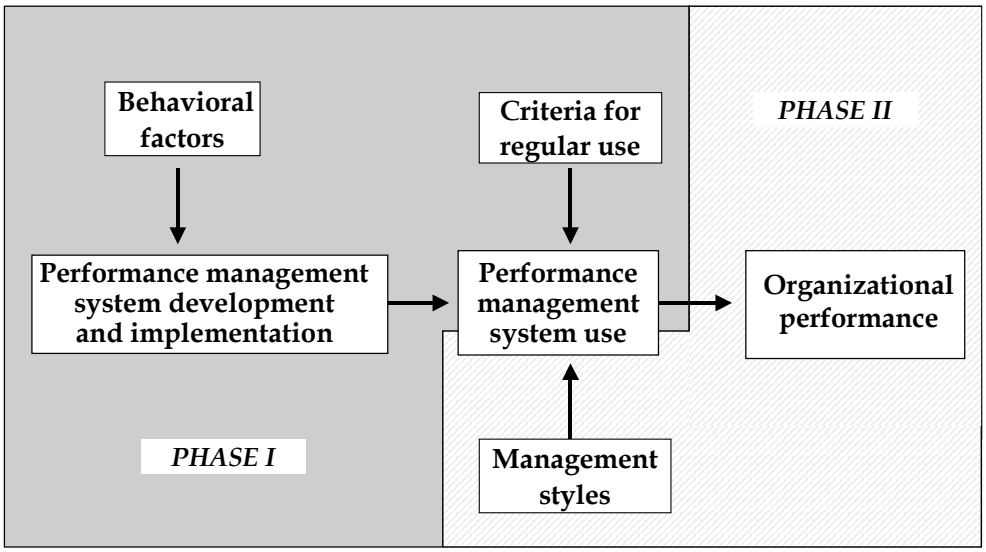


Exhibit 1.1: Schematic overview of study scope

This dissertation thus describes the results of research that aims specifically at the relationship between managerial behavior and the use of a performance management system. As such, this research can make a contribution to a relatively underdeveloped field of research (Ittner and Larcker, 1998b). The results of the research can also have practical value to organizations. This is important, as Quinn et al. (2000) remark: "Our premise is that we assume organizational research can and should be of interest to not only the academic research community but also to practitioners who can benefit from research focused on helping to make their organizations more effective."

The introduction of CSFs, KPIs, and the BSC can have a great impact on an organization and its managers. But, as Vitale et al. (1994) observe, many organizations underestimate the effect of these on the motivation and interest of managers. By taking possible consequences of a new performance management system on the styles and behavior of people into account beforehand, the implementation approach can be adapted in such a way that the introduction of a new system can be made easier. This is even more important, as Kröger et al. (1998) found – during a survey into best practices in the area of restructuring at 211 European companies across all industries – that the vast majority of restructuring obstacles are related to behavioral issues (Exhibit 1.2). Kröger et al. conclude that "getting the people issues right" is critical because this will improve an organization's performance. However, they note that many organizations still have a hard time "getting it right".

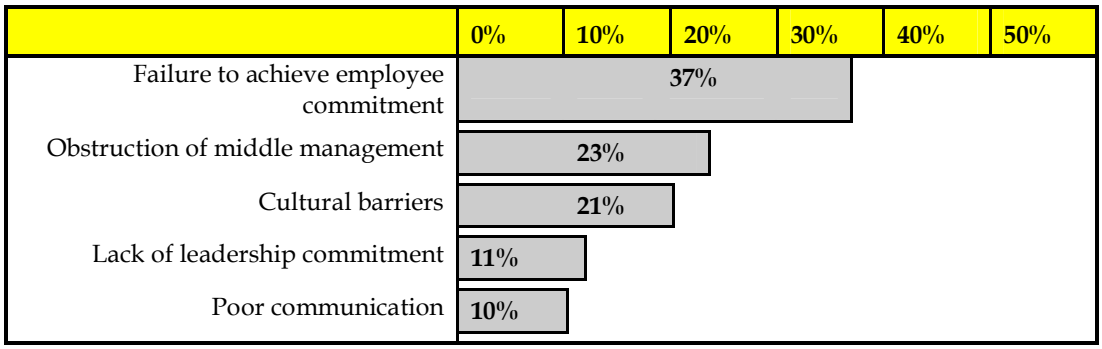


Exhibit 1.2: Types of restructuring obstacles, in percentage of survey respondents (Source: Kröger, F., M. Träum and M. Vandenbosch, 1998, Spearheading growth, how Europe's top companies are restructuring to win*, Pitman Publishing, London)*

1.3 RESEARCH APPROACH

The aim of this study is to formulate and validate various research questions and hypotheses about the behavioral factors that could influence the implementation and regular use of a performance management system. These research questions and hypotheses will be answered and tested by means of case studies and survey research. This is the idiografic method (Biemans and Van der Meer-Kooistra, 1994), which tests theoretical hypotheses through actual case study research to come to a generalization of the new theory. In this way, scientific research and practical application have been combined in such a way that it is applied scientific research (Bossert, 1993).

The research for this study was conducted in two main phases. Phase I focused on behavioral factors that are important to the successful implementation and use of performance management systems. Phase II focused on management styles that are important to certain types of performance management system use. Exhibit 1.3 gives a graphic representation of the research approach.

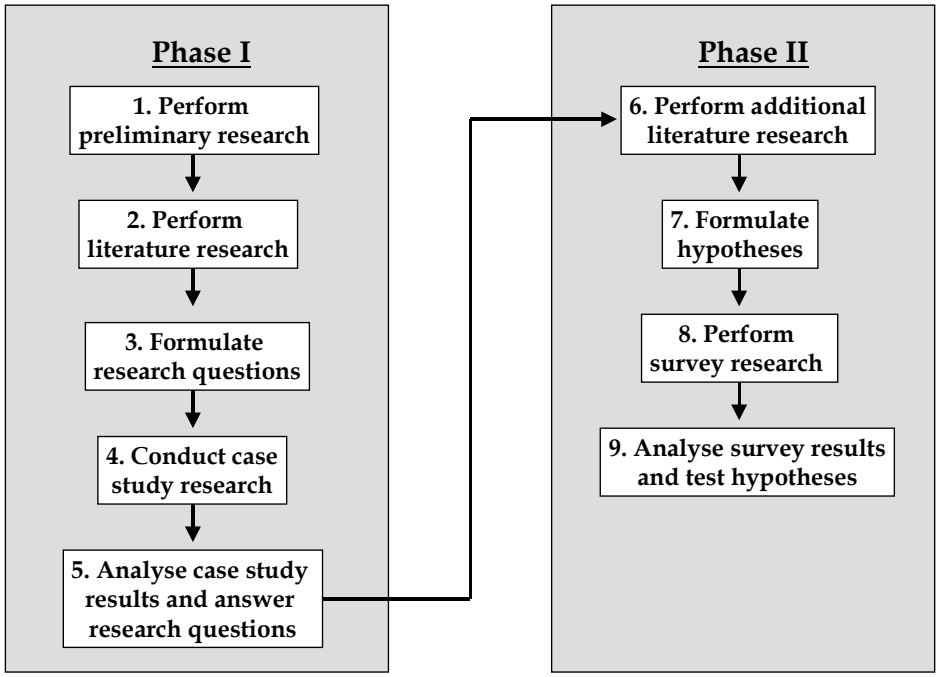


Exhibit 1.3: Research approach

1. *Perform preliminary research* – Based on experiences gained during consulting projects, I formulated an initial research idea. This was followed by a short literature study of recent surveys and case studies in the field of performance management. On the basis of this preliminary research, organizations were approached to determine if there was enough interest in participating in case study research. Preconditions for the study were also examined, such as obtaining enough study time and ensuring logistical support. This preliminary research stage is not further described in this dissertation.
2. *Perform literature research* – Based on the preliminary study, the choice was made for a performance management system that is based on CSFs, KPIs, and the BSC, as the study object. During the literature study, the history and the developments of performance management systems were examined. The importance of behavioral factors for the design, implementation and use of performance management systems was established. The dissertation starts with describing this research stage.
3. *Formulate research questions* – Behavioral factors, important to the successful implementation and use of CSFs, KPIs, and the BSC were identified and grouped in a so-called classification scheme and grouped in the three stages in the "life" of a performance management system: starting, development, and use. After that, criteria of regular performance management system use were identified in order to judge whether the implementation and use of a performance management system could be deemed successful. A performance management system is regarded successful if managers use it frequently and daily. Research questions were drafted based on the literature. Then, both the behavioral factors and criteria for regular use were operationalized in questions that could be asked during interviews with users of the performance management system.
4. *Conduct case study research* – For phase I, the case study method was chosen to answer the research questions. The case studies were performed at three organizations. During the

case studies, interviews, questionnaires and document research were used as sources of information. For each case study, a case study description was written, which was checked and approved by organizations that participated in the case studies.

5. *Analyze case study results and answer research questions* – After all the case study descriptions were finalized and approved, the final analysis took place. The results from the case studies were collected and compared with each other. The results from the final analysis showed that specific behavioral factors, effective during all phases of performance management system design, implementation, and use are indeed important to the success of a performance management system. The results of phase I indicated that management styles and resulting observable behaviors, both of which had not been taken into account in this phase, may influence whether the implementation and use of a performance management system would be successful or not. For this reason, it was decided to start phase II, in which management styles and behavior are researched in more detail.
6. *Perform additional literature research* – The additional literature study was focused on identification of the specific management styles that managers theoretically should have and the behaviors that managers should display, to make regular use of a performance management system. Both performance management system use and management styles were operationalized in a questionnaire.
7. *Formulate hypotheses* – Based on statements and assumptions found in the literature, hypotheses were drafted about the relationships between types of performance management system use and management styles.
8. *Perform survey research* – For phase II, the survey study method was chosen to test the hypotheses. The survey was executed at 11 organizations.
9. *Analyze survey results and test hypotheses* – The results of the survey were analyzed and the hypotheses were tested. Based on the analysis, it was concluded that specific management styles and the resulting observable behaviors are indeed important to the successful implementation and use of a performance management system, although not always in the manner the literature predicts. Finally, suggestions for further research are given.

2 Brief History of Performance Management Systems

This chapter provides a description of the literature research (Exhibit 2.1). In this research, the history and the developments of performance management systems were examined, and the importance of behavioral factors for the design, implementation, and use of performance management systems was established.

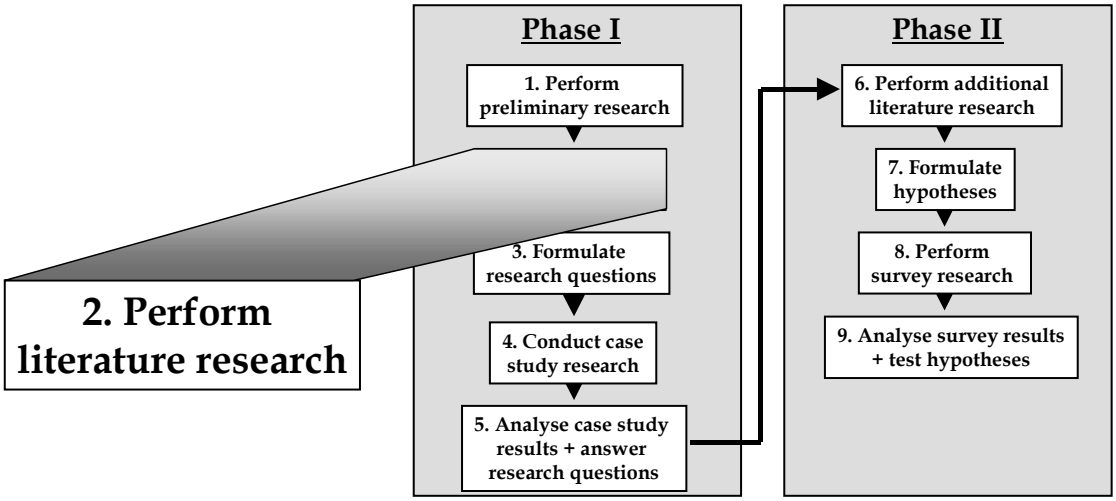


Exhibit 2.1: Research stage described in Chapter 2

2.1 PURPOSE OF MANAGEMENT CONTROL AND INFORMATION SYSTEMS

To be successful in the long run, an organization needs, according to Bossert (1993, 1996), a clear and explicit management concept that is formulated by top management. This management concept is the basis for long-term development of the organizational strategy and strategic objectives. The strategy has to be translated at lower levels of the organization into business unit plans, budgets, and operational action plans. The management concept must be supported through an unambiguous and well-organized planning and control cycle that gives clear feedback through a performance management system on the execution of plans. Having an effective performance management system is critical for business success (Lobo et al., 2000). Based on a literature review, the purpose of the performance management system and its place in the planning and control cycle of an organization is examined. The history and the developments of the performance management system are also discussed in this chapter. The review starts with the fundamental scientific literature (like Anthony et al., 1989), and then focuses on literature resulting from applied research. Thus, the way in which practitioners

have translated the recommendations from scientific literature into practical, applied recommendations, and test whether these persist in scientific research, is studied.

According to Anthony (1965), Anthony et al. (1989) and Zairi and Jarrar (2000), a management control and information system helps managers influence other members of an organization in such a way that the organization's mission and strategy are implemented, while simultaneously ensuring that resources are used effectively and efficiently. According to Langfield-Smith (1997), this definition is too narrow, limiting research in this field in such a way as not taking into account the accounting-based controls of planning, monitoring of activities, measuring performance and integrating mechanisms. In recent years, it became more and more clear that this orientation toward accounting controls and accounting information was not sufficiently broad to capture more modern approaches to effective control. Nowadays, a modern management control and information system distinguishes two components: (1) the management control structure, which states what the system is; and (2) the management control process, which is what the system does (Exhibit 2.2).

Exhibit 2.2: Relationship between mission and strategy of an organization and its management control structure and process (Source: based on Petri, R., and G.J.A.M. van der Vossen,1994, 'Management control structure', Handbook Management Accounting*, D1100: 1-33)*

Petri and Van der Vossen (1994) define the management control structure as a combination of organizational activities (consisting of product–market combinations derived from the strategy), organizational structure (consisting of the division of authorities and responsibilities), standards of performance measurement and evaluation, infrastructure for the planning and

control cycle, and infrastructure for management information. The management control process is defined as the steps and decisions taken when setting targets, allocating resources, evaluating performance, executing corrective actions, and realizing targets. Finally, the manner in which the management control system is used by an organization is referred to as the organization's management style.

Management control process, structure, and style have to be formulated and organized in such a way that the realization of targets of every organizational entity and the organization as a whole is supported and advanced. For this purpose, the management control and information system needs to provide adequate management information. Simon et al. (1954) distinguish three categories of management information use: (1) scorecard keeping, usually a standardized reporting process, which is characterized by consistency between time periods so comparisons are easy to make; (2) improving, understanding and consequently problem solving; and (3) focusing organizational attention and learning. To these three, Vandenbosch (1999) adds a fourth category: legitimizing decisions. Lohman (1999) refines the categories by stating that performance management information is specifically intended to be used to support decision-making processes to control the organization (and not decision-making processes in general), and that the effectiveness of performance management information is related to its contribution to the performance of the organization (and not only to the satisfaction of the user of the information). In order to obtain performance management information, performance measurement has to take place. Performance measurement is defined by Neely (1998) as "the process of quantifying past action, where measurement is the process of quantification and past action determines current performance. Organizations achieve their goals by satisfying their customers with greater efficiency and effectiveness than their competitors. Effectiveness refers to the extent to which customer requirements are met and efficiency is a measure of how economically the organization's resources are utilized when providing a given level of customer satisfaction. A performance measure can now be defined as a metric used to quantify the efficiency and/or effectiveness of a past action."

Rigas and Fan (2000) go further than Neely. In their view, the term "measurement" is not quite correct because the process of performance measurement does not automatically lead to performance improvements. It should always initiate action through the use of appropriate measures. For this reason, they consider "performance management" and "performance management system" to be better terms. Armstrong and Baron (1998) list the aims of such a performance management system as: helping to achieve sustainable improvements in organizational performance; acting as a lever for change in developing a more performance-oriented culture; increasing the motivation and commitment of employees; enabling individuals to develop their abilities, increase their job satisfaction, and achieve their full potential to their own benefit and that of the organization as a whole; enhancing the development of team cohesion and performance; developing constructive and open relationships between individuals and their managers in a process of continuing dialogue that is linked to the work actually being done throughout the year; and providing opportunities for individuals to express their aspirations and expectations about their work. Martins (2000) lists some additional purposes for a performance management system: creating continuous improvement; planning; reinforcement of management rhetoric; pay for group performance; induction of employees' attitudes; benchmarking; individual and organizational learning; and focus and justification of investments.
Simons defines a performance measurement and control system as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities. These systems focus on conveying financial and nonfinancial information that influ-

ence decision making and managerial action taking. The recording, analyzing, and distributing of this information is embedded in the rhythm of the organization, and is often based on predetermined practices and at preset times in the business cycle. These systems are designed specifically to be used by managers." In this dissertation, Simons' definition is used for a performance management system, because his definition contains the measurement element (as proposed by Neely, 1998) and the action element (as proposed by Rigas and Fan, 2000).

After studying these aims and purposes, it can be noted that the use of a performance management system, in the context of the manager's work environment, resembles the planning and control cycle, as described by Anthony and Govindarajan (1995). The planning stage of the cycle starts after the long-term strategic objectives of the organization have been formulated and the corresponding management information needs have been defined. The purpose of this stage is to translate strategic plans into tangible, short-term action plans for each business unit. Management has at its disposal the results of the previous period(s) and the analysis of these results. These are used to make an action plan for the next period (Anthony and Govindarajan, 1995; Kaplan and Norton, 1992, 1996b; Mooraj et al., 1999). It is crucial for people to use the analysis of the preceding period to learn from incorrect assessments or mistakes (Vandenbosch, 1999; Kloot, 1997; Kaplan and Norton, 1996a). According to the literature, managers make use of a performance management system in the planning stage if: (1) they take the performance management system analysis of the preceding period as the basis for setting financial and nonfinancial targets for the next period(s); (2) they set priorities for the targets because these can be conflicting; (3) they determine which specific actions have to be taken to achieve these targets; (4) they allocate resources on the basis of planned actions and targets; and (5) they discuss the action planning with superiors and colleagues.
Making action plans is followed by implementing these plans. The manager has to make sure that this is done efficiently. The primary task of the manager in the control stage, therefore, is to communicate clearly the strategy, targets, and planned actions to all employees and to control their implementation. Additionally, the manager indicates which indicators need to be measured and the way in which this should be done (Kaplan and Norton, 1996b; Lynch and Cross, 1995; Anthony and Govindarajan, 1995; Algera et al., 1992). According to the literature, managers make use of a performance management system in the control stage if they inform employees through the performance management system about the strategy, targets, planned actions, and the results to be measured and reported, and motivate employees by regularly providing intermediate feedback via the performance management system on the organization's results.
The purpose of the measurement stage is to collect information on the results of activities so that management can determine if adjustment is required. According to Choo (2000), the three basic steps in how people acquire and process information are: (1) determination of information needs, (2) information seeking,; and (3) information use – each of which can be considered in terms of cognitive, emotional, and situational factors. Information needs arise when people experience cognitive gaps that hinder their progress and induce uncertainty. To bridge these gaps, they seek good, accessible information sources. During and after execution of activities, management makes sure that the organization's results are collected and recorded in the performance management system. The performance management system is used to provide feedback (via screens or reports) to managers on the implemented action plans. The feedback is closely studied by management to identify areas for improvement or correction (Simons, 1995; Kloot, 1997; Kaplan and Norton, 1996b; Hacker and Brotherton, 1998). According to the literature, managers make use of a performance management system in the measurement stage when they collect information in the performance management system for feedback purposes, study the results of the financial and nonfinancial targets and compare

these with budget, provide feedback via the performance management system to employees on the results and discuss these with them so that employees achieve the defined targets, and determine if there is a need for further analysis of the performance management system and which adjustments to the action plans are needed.
In the feedback stage, managers identify, based on the organization's results, those areas that need further attention and detailed interpretation (Simons, 1995; Kloot, 1997). Managers look for causal relationships between the various results and try to find causes for lagging results in the internal and external environments (Hacker and Brotherton, 1998; Kloot, 1997; Atkinson et al., 1997b).
Feedback on the results to the employees and formulation and execution of corrective and preventive action then takes place (Leonard et al., 1996; Pfeffer and Sutton, 2000). The performance management system is used to discuss frequently (mostly monthly) the execution and adjustment of action plans (Simons, 1991; 1995; Kloot, 1997; Leonard et al., 1996; Kaplan and Norton, 1996a; Hacker and Brotherton, 1998). Additionally, the validity of the formulated strategy is discussed in periodic (less frequent, e.g. quarterly) meetings (Kloot, 1997). According to the literature, managers make use of a performance management system in the feedback stage if: (1) they interpret the KPI results and look for causal relationships between the different variables in the performance management system; (2) they look into the internal and external environments for explanations for lagging results and then formulate corrective actions on the basis of this analysis; (3) they discuss the information in the performance management system and possible adjustments to the action plans with colleagues; (4) they discuss the validity of the formulated strategy and check the underlying assumptions in quarterly meetings; (5) they share the information in the performance management system and the outcomes of periodic meetings with superiors and colleagues, thereby advising superiors about possible adjustments of strategic programs; and (6) they record important data from the discussions as well as of the outcomes of review and analysis meetings in the performance management system for future use and learning.

According to Algera (2000), there are three key questions that must be answered when implementing a performance management system:

1. How can performance be measured in practice? One has to look, among other things, at the definition of results and result areas, the validity of performance measures and indicators, and coverage of all relevant aspects.
2. How involved are managers in a performance management system? Under which conditions are managers willing to adapt a new system? This question is very relevant for the design of a performance management system because the purpose of this system is designed to influence managerial behavior.
3. Have actual performance improvements been accomplished? This is all about the tools and information managers need to be able to achieve quality improvements in their products and services.

Chapters 2 and 3 focus on what current literature has to offer in answering these three questions. To be able to answer the first question, the history of performance management systems is reviewed in this chapter: the decline of the traditional management control and information system and the rise of a performance management system that is based on critical success factors (CSFs), key performance indicators (KPIs), and the balanced scorecard (BSC). This is followed by a look at the financial benefits and performance improvements that an organization can expect from implementing such a performance management system, according to the literature. Chapter 3 provides an overview of the behavioral factors mentioned in the litera-

ture that are seen as important for the design, implementation, and use of a performance management system that is based on CSFs, KPIs, and the BSC.

2.2 DEVELOPMENT OF PERFORMANCE MANAGEMENT SYSTEMS

Johnson and Kaplan (1987) distinguish three stages in the development of management control and information systems – or performance management systems – which are closely linked to industrial developments:

- *Stage 1*: *Very low system complexity* – Many of the earliest managed business organizations limited their attention to coordinating and controlling labor-intensive tasks in a few closely linked manufacturing processes that tended to produce fairly homogeneous product lines. Management control and information systems mainly focused on the collection of financial and nonfinancial data about efficiency of input and output conversion activities in processes, including non-accounting data about cost of process outputs. Meyer (1999) argues that nineteenth-century firms measured their costs and revenues meticulously. However, they were careful to disclose very little information and often told their shareholders nothing about their performance.
- *Stage 2*: *Medium to high system complexity* – By the late nineteenth century, large-scale organizations integrated mass production with mass marketing and spanned a complex variety of intermediate and finished products. Frederick Taylor's scientific management was introduced around 1911, when it was argued that division and specialization of labor would lead to greater productivity. Standard production methods were used and standard costing techniques applied (Zairi, 1996). In the period of 1920–1925, DuPont and General Motors experimented by introducing decentralized divisional structures with profit centers. As support for these reorganizations they also introduced the DuPont chart, and with it the concept of return on investment (ROI). This meant that management was now also held responsible for the achievement of budgeted ROI, and therefore not only focused on measures of margin and net income but also on return on investment.
- *Stage 3*: *Growing system complexity* – Between the 1920s and the 1980s, large business organizations had to cope with growing organizational complexity. They focused internal activities along product lines or geographic regions by creating multidivisional structures. In addition, they increasingly decoupled functions and processes. This meant that the DuPont chart and the concept of ROI was used more and more. The principles of capital investment appraisal, budgeting, performance measurement, variance accounting, and ROI were introduced in the 1920s. By the 1930s, fully integrated cost and management accounting systems were developed, regulated, subjected to independent auditing, and linked to external financial operating systems (Zairi, 1996). After the 1950s, management information systems focused on the growing use of accounting targets to control operating processes.

It can be stated that by the 1930s most standard cost accounting methods, such as budgeting, standard costing, transfer pricing, and the DuPont model, had been developed and incorporated in the accounting textbooks. Only in sporadic instances new developments, such as the concepts of residual income and net present value, were included in the textbooks (Zairi, 1996; Groot, 1997; Olve et al., 1999).

However, after World War II it became increasingly apparent that management needed other information than that supplied by the traditional management control and information systems. This information was needed because, as Kaplan (1983, 1984) states, the systems and

procedures of cost accounting and managerial control in use at that time were devised for manufacturing organizations with mass production. In this type of organization, cost–price calculation and responsibility accounting systems mainly focused on recording labor costs and minimizing manufacturing costs. In the 1980s, the competitive environment changed dramatically through the appearance of new technologies, increased competition as a consequence of deregulations, and the emergence of foreign producers. Quality improvements, reduced inventory, more efficient production processes, and increased automation were needed to face this new environment. These changes reduced the direct and indirect labor content of products and services and increased overhead costs. The traditional management accounting and information systems were not suited for modern organizations that were characterized by customer specific production, short life cycles, computer-aided design and computer-aided manufacturing technology, and (more) overhead.
Although in the 1980s the systems were installed and running on computers, few showed any difference in design philosophy to reflect the increased computational power of digital computers. Johnson and Kaplan state that even with the fastest of closings, the cost information was produced too late and at a too aggregated level to help short-term production control. They further critique the 1980s' cost accounting systems by saying that these systems "are helpful neither for product costing nor for operational cost control; they do not provide information useful for cost management. The rationalization for their production and existence seems only for the periodic, usually monthly, financial reports prepared for senior management." Neely (1998) adds to this that the practice of allocating overheads on the basis of direct labor resulted in widely erroneous product costs because by the 1980s direct labor rarely constituted more than 5 to 10% of the cost of goods sold. The net effect of this was that managers made the wrong decisions.

Following Johnson and Kaplan, many authors (Nolan, Norton & Co, 1992; Business Intelligence Research, 1992; Van Dijk and Timmer, 1994, 1995; Brancato, 1995; Wiersma, 1998; Neely, 1998; Berenschot, 1999; Pfeffer and Sutton, 2000) have listed the problems they encountered with traditional management accounting and information systems. Some of the most frequently mentioned problem areas, many of which will endure well into the twentyfirst century, are:

- *One-sided information* – Management information is too financially oriented. This is caused by the fact that the management control and information systems have been designed to satisfy legal requirements. This means that the decision process is mainly based on financial measurements. Financial ratios, like ROI and working capital, are not used much. Nonfinancial information remains all too often restricted to personnel (number of full-time equivalents, absenteeism), project (i.e., status of large investments), and external (market share) information. Information about client satisfaction, vendor performance, innovation, product quality, and intellectual capital is insufficient or not available. The information is mainly internally focused on the activities of the organization itself. Information on competitors and environmental conditions is missing. Financial and nonfinancial targets are based on experiences in the past, not on client information or benchmark data. Information is often aimed at measuring the inputs, not the outputs. This focuses management on acquiring budgets instead of on the results that should be obtained by these budgets.
- *Low-quality information* – Management reports are often incomplete, causing many requests from management for additional information. The information is too aggregated. End results are measured, but not the processes causing these results. The management control and information system is often not linked to the supplying operational systems, causing

much manual work to generate reports. Many managers do not use the reporting possibilities of the operational and management control and information systems adequately.

- *Tardy information* – Management information is too historically focused. Accurate measurement of past performance takes place, but forecasts of future performance are hardly made. This causes short-term behavior, going for the quick wins, instead of for long-term development and investment. The information is not supplied in appropriate time to management. Consequently, the value of the information decreases because necessary corrective actions are taken too late and the positive effects of these actions are delayed. Reports are still distributed in paper format, taking a long time. Another issue in this respect is, as Ten Have et al. (1998) note, that actions with a long-term effect are not executed because they negatively effect the short-term financial result.
- *Misaligned organizational concept* – Management control and information systems are often based on outdated organizational concepts. They have been devised for manufacturing companies, while nowadays many organizations are predominantly service providers. To deal with these changes, many systems have been adjusted to reflect these changed circumstances, making them increasingly difficult to maintain and support. Critical business processes and functions are inadequately supported and measured. The execution of the organizational strategy is not measured adequately at all levels of the organization.
- *Overload of data* – Management information does not contain ratios, trends, indicators, graphs, colors, and standardized layouts. The management control and information systems generate too much data. As Vodosek and Sutcliffe (2000) state: "Conventional wisdom and current management practices suggest that more data and more analysis lead to better decisions. Yet, research on information and decision making indicates that more is not always better." The quality of analyses is low. Often, the figures are restated in text without giving an analysis of the real causes of the results. As a consequence, formulated actions cannot be effective because they do not address the real problems. Usually, the impact of these actions are not predicted either, so the organization has no idea of the effectiveness of its action. This all decreases the user friendliness and effectiveness of information.
- *Lack of communication* – Communication about management information is not structured, causing insufficient discussions and action on organizational results. Reports are rarely used for communicating (strategic) results to the organization.
- *Misaligned culture* – There is no culture of trust and continuous improvement in the organization, causing inadequate action on measured results. Because the wrong things are measured, the management accounting and information systems foster the wrong behavior. After all, "what gets measured gets managed." The systems do not take into account the mental images of managers toward information, thus causing a mismatch between the delivered information and the information managers actually want.

According to Johnson and Kaplan (1987), many of these problems are, among other things, caused by organizations' using management control and information systems that are basically the same as the ones used in the 1930s. However, according to Groot (1997) and Den Boer and Van Zutphen (1996), in the last few decades a constant stream of new developments in production and processing techniques – such as flexible manufacturing systems, just-in-time production, materials requirements planning, enterprise requirements planning, supply chain management and total quality assurance – has been matched by new management information and accounting techniques – such as target costing, value engineering, strategic cost accounting, activity-based costing/management, kaizen costing, and nonfinancial performance indicators. Although, as Groot (1997) argues, many of these new accounting techniques

are variations of older methods and ideas, they nonetheless provide a valuable contribution to managing an increasingly complex environment.

The idea of nonfinancial measures in itself was not new (Olve et al., 1999). In 1954, Simon et al. concluded that managers make more use of quantitative, nonfinancial data than of financial data. This, in itself, is not surprising as for almost all organizational levels nonfinancial information plays a role in the decision-making process, only the amount and time period of the information differs per management level (Groot, 1997). In the 1950s, General Electric implemented a balanced set of performance measures (Kennerley and Neely, 2000). In 1961, Daniel diagnosed that many organizations were "plagued by a common problem: inadequate management information, not in the sense of there not being enough, but in terms of relevancy for setting objectives, for shaping alternative strategies, for making decisions, and for measuring results against planned goals." He proposed that an organization needed a combination of environmental, competitive, and internal information provided by financial and nonfinancial data. Daniel's idea did not really catch on; not in the literature nor in the practice of the day can much reference be found to nonfinancial indicators. This was probably because he was too optimistic about the capabilities of computers of that time to deliver the right information. The result was that significant improvements in the delivery of management information failed to materialize.

Then, in 1979, Rockart describes a new approach to improve management control and information systems. He proposes organizations to apply a concept called critical success factors (CSFs): "Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where 'things must go right' for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired. As a result, the critical success factors are areas of activity that should receive constant and careful management attention. The current status of performance in each area should be continually measured and that information should be made available." These CSFs should, according to Rockart, be measured with prime measures, in later publications (Wijn et al., 1996) referred to as key performance indicators (KPIs).

A CSF is defined as a qualitative description of a strategic element at which the organization has to excel in order to be successful (De Waal and Bulthuis, 1996). The CSF is made quantifiable with a KPI. The use of CSFs and KPIs enables measurement and, thus, control of strategic objectives. If performance indicators that measure the execution of the strategy and the creation of value to the organization are not included in the performance management process, it will not be transparent whether or not strategic objectives and value creation are being achieved. Exhibit 2.3 gives an example of a CSF and KPIs.

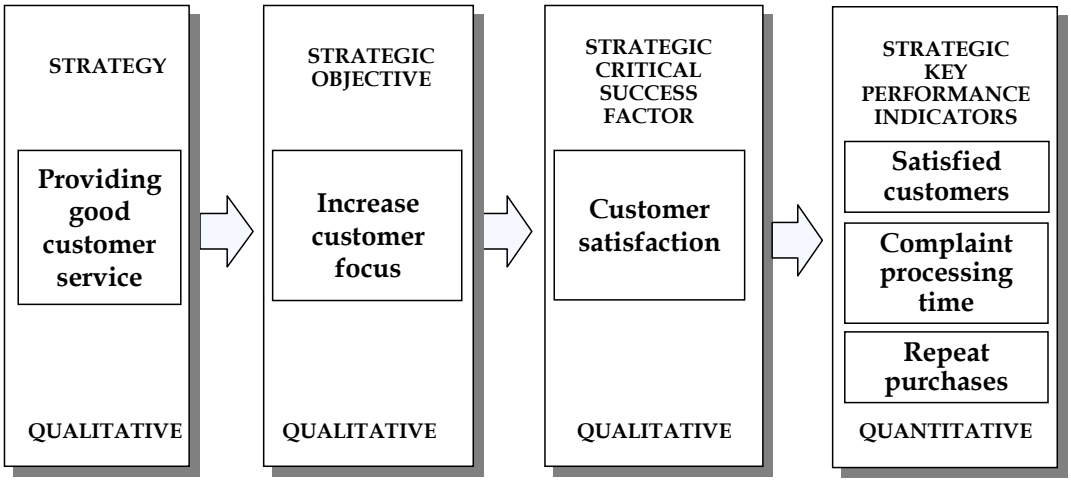


Exhibit 2.3: Example of CSF and its corresponding KPIs

Providing good customer service is of critical importance for an organization's success. One of the ways to provide this service is by increasing the focus on the customer throughout the organization, thereby increasing customer satisfaction. Whether customer service is satisfactory is reflected in the number of customers that repeatedly buy products or services (i.e., repeat purchases). Customer satisfaction can also be measured by proactively asking customers what they think of the services provided (i.e., satisfied customers). An important activity that helps to keep customers satisfied is to respond quickly to complaints (i.e., complaint processing time).

It seemed Rockart's concept initially caught on. At the time, CSFs were seen as a breakthrough approach to help executives focus on a few simple areas that were critical in the attainment of larger organizational goals (Lynch and Cross, 1995). The theme was quickly picked up by other researchers (Hahn and Krystek, 1979; Munro and Wheeler, 1980), who demonstrated that "the CSF method seems to be the answer to the criticism that management information systems activities can be of little assistance to executives at senior organizational levels."

However, after the initial surge of interest, it once again became rather quiet on the implementation front because according to Olve et al. (1999) "managers were searching for even more simplified ways to represent cause–effect relationships at companies."
This relative silence lasted until the beginning of the 1990s. At that time, Eccles (1991, 1992) published an important article in the Harvard Business Review, in which he predicted that a performance measurement revolution would take place in the next five years. During this revolution, traditional financial information systems would be replaced by nonfinancial information systems. According to Eccles, this revolution was needed to improve managers' satisfaction with the information they receive, and to satisfy the increased information requirements of modern-day organizations caused by new techniques like total quality management, focus on customer satisfaction, and benchmarking.
Kaplan and Norton extended the work of Rockart by introducing the concept of the balanced scorecard (BSC) through a series of articles in the Harvard Business Review (1992, 1993, 1996b) and books (1996a, 2000). The BSC is used to represent the financial and nonfinancial

performance indicators in a user-friendly format. Traditionally, a BSC has four perspectives or areas (Kaplan and Norton, 1996):

- The *Innovation* perspective measures how often an organization introduces new products, services, or (production) techniques. In this way, the organization makes sure it does not become complacent but continuously renews itself. Sometimes organizations include people aspects in this perspective. These are used to measure the well-being, commitment, and competence of people in the organization. People aspects measure cultural qualities like internal partnership, teamwork, and knowledge sharing, as well as aggregate individual qualities like leadership, competency, and use of technology.
- The *Internal* (or *Process*) perspective measures the effectiveness of the processes by which the organization creates value. It follows the innovation perspective because value is generally created in the production of new products, services, and techniques. The contribution of innovative people to the ability of the organization to create value consists of implementing and managing effective processes. The internal perspective measures how effectively processes operate. It precedes the customer perspective because efficient processes make it possible for an organization to stay or become more competitive.
- The *Customer* perspective measures performance in terms of how the customer experiences the value created by the organization. It follows the internal perspective because value created by processes is meaningful only when it is perceived by the customer as being valuable.
- The *Financial* perspective measures the bottom line, such as growth, ROI, and the other traditional measures of business performance. It is the last perspective because it is the final result of good, committed people; of implementing and operating effective processes; of the ability for renewal; and of creating value that customers have chosen to purchase.

In different organizations, the perspectives and the leading indicators can be different, but the idea of the BSC is to provide a balanced set of measurements that allow an organization to measure the cause–and–effect chain by which customer and shareholder value is created. If value is created by people working on and in processes to satisfy customers and to produce financial results, then managers must be able to measure and monitor all of these perspectives of value creation to effectively manage the business. By combining lagging and leading CSFs and KPIs, managers gain an understanding of where the organization was and where it is going. The "balanced" in the balanced scorecard can be found in several aspects: nonfinancial data complements financial data; leading information (customer and innovative data) complements lagging information (financial and internal data); and internal information (financial, internal and innovative data) complements external information (customer data). Exhibit 2.4 gives an example of the BSC.

The main benefit of managing with a combination of financial and nonfinancial information is that the use of leading, nonfinancial indicators facilitates proactive control and the ability to take preventive action. A balanced set of key financial and nonfinancial CSFs and KPIs enables management to focus on the really important issues that drive business performance and to monitor the achievement of strategic goals more closely. Using nonfinancial information improves the analysis capabilities of managers because they can identify the root causes of financial performance. The nonfinancials can include external information, making it possible for management to compare the internal results with external trends and drivers.

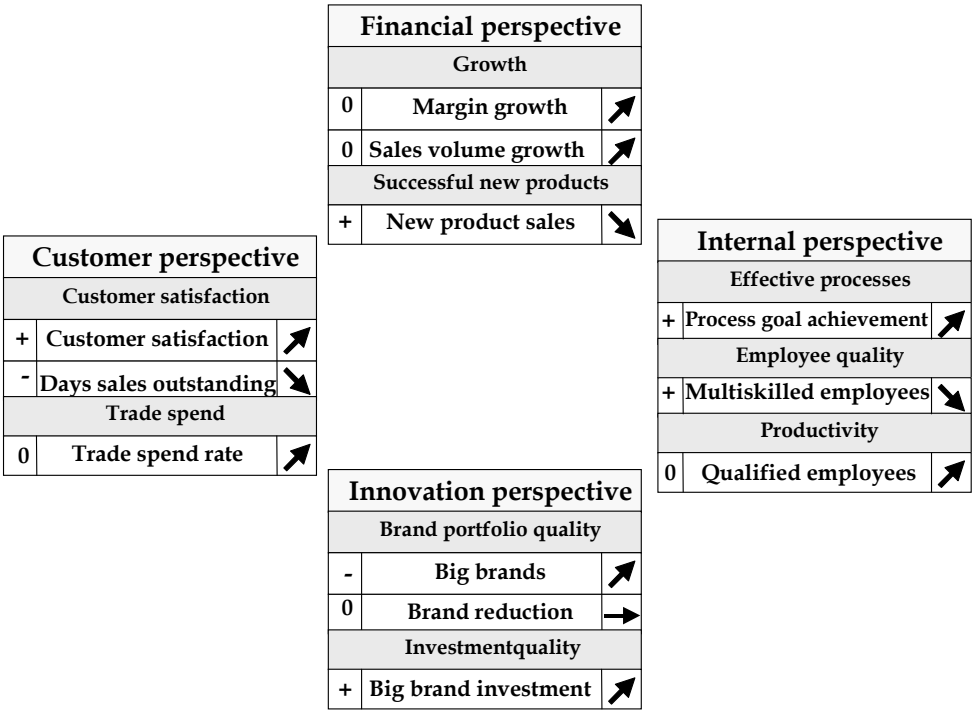


Exhibit 2.4: Example of the BSC

It is interesting to see how Kaplan and Norton extended the ideas proposed earlier by other authors. For instance, their lagging and leading indicators were mentioned by Rockart (1979) as monitoring and building CSFs. Also, Chakravarthy (1986) concluded that conventional profitability criteria such as return on equity and return on total capital were incapable of distinguishing differences in the strategic performances of organizations. He proposed that organizations, instead of searching for a single measure that most significantly determined performance, should use a multi-factor model of performance assessment because performance is a complex phenomenon requiring more than a single criterion to define it. A well-known predecessor of the BSC is the Tableau de Bord (Lebas, 1994; Epstein and Manzoni, 1997). It emerged in France at the end of the nineteenth century, having been developed by process engineers who were looking for ways to improve the production process by understanding better the cause–effect relationships. The same principle then was applied at top-management level to give senior management a set of indicators that would allow them to monitor progress of the business, compare it to the goals that had been set, and give them the corrective actions needed. Just as Kaplan and Norton proposed that each management level has its own scorecard, so French writers proposed that each organizational unit had its own Tableau de Bord. And, even more important, the Tableau de Bord was not to be limited to financial indicators but should be extended with operational measures. And there are other similarities. Just as the BSC, the development of the Tableau de Bord involved translating an organizational unit's vision and mission into a set of objectives, from which the unit identified its CSFs that then were translated into a series of quantitative KPIs. To provide managers with the information they could use for decision making, the Tableau de Bord primarily contained performance indicators that largely were controllable by the organizational unit.

Many authors supported Kaplan and Norton's concept (Sparrow, 1998; Pfeffer and Sutton, 2000; Oliver, 2000; Otley, 2000). For instance, Traas (1996) states that the BSC is a well-thought-out design for a managerial dashboard, which has proven its value in practice, and Atkinson et al. (1997b) proclaim the importance of the BSC in its ability to tie strategy, process and managers together and, in doing so, providing an integrated system of planning and control. Young (1998) quotes research firm Gartner who predicts that by 2002, forty percent of Fortune 1000 organizations will have some form of strategic measurement system like the BSC in place. Many of these companies will be deploying such systems enterprisewide. Young and Neely (1998) claim that the business community firmly believes the concept is here to stay. As reason for this, they state, is that the BSC is "an idea whose time has come" due to the growing frustration with traditional measurement systems, coupled with an increasing need to cope with an ever more complex world. The concept is also extremely well packaged and has been carefully marketed. Finally, the concept is easy to comprehend, which means that people reading about the BSC for the first time can immediately understand it.
This does not mean that no one criticizes the BSC. For instance, Neely (1998) mentions two weaknesses of the BSC. One is the emphasis on the customer perspective, implicitly ignoring the broader market perspective, which concentrates on how the organization looks at the customer in comparison with competitors. A second weakness of the BSC is the absence of any mention of suppliers. It is assumed that if the business itself excels, then all will be well, but in these days of increased outsourcing, business interdependencies are continually growing. Lobo et al. (2000) recount some bad experiences with BSC implementations in which companies have abandoned their scorecards after a few years without consistent results or as a result of difficulties during the implementation phase. These organizations have reported problems in defining the measures – especially in areas where performance is more qualitative than quantitative – and in decomposing the measures to lower levels in the organizations. Kennerly and Neely (2000) summarize the issues quite well: "Despite its widespread use, numerous authors have identified shortcomings of the BSC. It does not consider a number of features from earlier frameworks that could be used to enhance the framework. The absence of a competitiveness dimension is noted. Others emphasize the importance of measurement of the human resource perspective/employee satisfaction, supplier performance, product/service quality and environmental/community perspective. Failure of the BSC to consider these dimensions limits its comprehensiveness because not all measures can be included. A further criticism of the BSC is that it does not reflect different dimensions of performance. Neither the customer perspective or the internal perspective are defined in terms of the dimensions of performance that determine success, such as the generic strategic objectives of quality, cost, delivery (speed and reliability), and flexibility."

Jorissen (1994) summarizes the developments in the field of performance management systems as:

- *Organizations pay more attention to the design of the performance management system* – Until recently, many organizations would, while setting up a new performance management system, automatically have designed ROI criteria and deviation analyses without really looking at the effectiveness of these indicators. Nowadays, the choice of KPIs comes from a structured process in which the strategy and CSFs of an organization take a central place.
- *Organizations broaden the CSF/KPI set in the performance management system* – In addition to the traditional financial indicators, CSFs and KPIs are now included in management reporting to monitor strategic goals like quality, delivery time, client satisfaction, competitor ranking, and employee retention.

- *Organizations go from absolute to relative KPIs and from separate indicators to a coherent set of indicators* – In the past, absolute targets were set for the KPIs that had to be achieved, no matter what. Nowadays, striving for continuous improvement causes targets to be changed regularly in an upward direction. The links between KPIs are also made more visible, and the KPIs are put in a balanced measurement system.

Why does the performance management system that is based on CSFs, KPIs, and the BSC experiences a breakthrough at this moment? One reason can be the recent developments in the area of information technology. Introducing CSFs, KPIs, and the BSC requires collecting, storing, and reporting a lot of new data (Kaplan and Norton, 1996a). In the 1990s, an increasing number of software vendors came to market with special applications, called executive information systems (EISs), which could better support the data and reporting requirements of CSFs and KPIs (Holtham, 1994). These new applications, combined with dramatically improved price–performance ratios in hardware and breakthroughs in software and database technology, made it possible for organizations to generate, disseminate, analyze, and store more information from more sources for more people more quickly and cheaply than ever before (Eccles, 1991). This was sorely needed, as Drucker (1999) points out. In Drucker's view, top executives have not used new technologies because these did not provide the information they need for their own tasks. According to him, the new systems are just starting to provide the information top executives really need: "from cost accounting to result control, from legal fiction to economic reality, information for wealth creation." Scapens (1998) stresses that the considerable advances that have taken place in information technology have important implications for management accounting. He states that the conclusions of Johnson and Kaplan largely revolved around the argument that it was very expensive at least in the 1980s to have more than one accounting system. According to Scapens, Johnson and Kaplan argued that a number of different accounting systems were necessary but due to the costs involved only one system could be used, which became the external reporting system as it is a legal requirement. However, with modern database technology, it is now possible to analyze information in a number of different ways and in effect to have different information systems for different purposes.

In general, it can be stated that information is becoming more widely dispersed throughout the organization. Databases can be accessed through corporate networks, so that anybody within the organization can have easy access to the information database. This means that a manager with a PC on his desk can very easily access a whole range of corporate information, including accounting information. This has led to a decentralization of information (Scapens, 1998; Shapiro and Varian, 1999).
Another reason for the final breakthrough is given by Zairi and Jarrar (2000), when they state that due to the emphasis on total quality management (TQM) these last few decades, the significance of performance measurement did not really get highlighted until recent years. Organizations are just now realizing that they need to quantify the benefits of TQM by providing management information that clearly demonstrates its credibility as a concept.
Kaplan and Norton (2000) see another argument why in particular the BSC is here to stay. Their argument is that in the traditional economy, which is dominated by tangible assets, financial measurements are adequate to record investments and expenses associated with inventory, property, and plant and equipment. However, in the new economy, in which intangible assets have become the major sources of competitive advantage, information tools are needed that describe knowledge-based assets and the value-creating strategies that these assets make possible. They quote a 1982 Brookings Institute study that showed that tangible book values represented 62% of industrial organizations' market values, while 10 years later

this ratio had dropped to 38%. Recent studies estimate that by the end of the twentieth century, the book value of tangible assets accounted only for 10 to 15% of companies' market values. Kaplan and Norton conclude that a different kind of management information is needed like the BSC to capture the move that has taken place in the main sources of creating value: these are shifting from managing tangible assets to managing knowledge-based strategies that deploy an organization's intangible assets – customer relationships; innovative products and services; high-quality and responsive operating processes; information technology and databases; and employee capabilities, skills, and motivation.

This time the concept of performance indicators indeed seems here to stay. Adler (1999) states that the introduction of nonfinancial performance measures is not a passing fad. This is because the size and scale of today's organizational operations are so complex that no chief executive officer (CEO) possesses the level of knowledge needed to manage all the company's operations and people. Consequently, today's CEO must incorporate additional sources of information in the decision-making process. What makes a further difference is that the combination of a strong, appealing concept developed by leading business school professors and the availability of supporting technology seems to be so appealing that many organizations decide to (finally) accept CSFs and KPIs. In this respect, Murray and Richardson (2000) remark: "The BSC has its admirers and detractors, but there can be no argument that it has stimulated considerable interest in (strategic) performance measurement." And Holloway (1999), Groot et al. (2000), and Neely and Austin (2000) view the rapid adaptation of the BSC by managers and consultants as evidence that the revolution predicted by Eccles is indeed under way.

2.3 BENEFITS OF A PERFORMANCE MANAGEMENT SYSTEM WITH CRITICAL SUCCESS FACTORS, KEY PERFORMANCE INDICATORS, AND THE BALANCED SCORECARD

Since their initial mention in 1961, many authors have listed the advantages of applying CSFs, KPIs, and the BSC, many of which address the problems encountered with the traditional management control and information systems as described in Section 2.2 (Jowett and Rothwell, 1988; Haselbekke et al., 1990; Business Intelligence Research, 1992; Kaplan and Norton, 1996b; Stam and Tossaint, 1996; Ashton, 1997; Wiersma, 1998). These advantages are:

- *Better quality of information* – CSFs and KPIs support effective planning and budgeting processes because they make the relationship between functions and activities on the one hand and performance on the other hand more clear. Reports are more complete and give a better view of crucial business activities. CSFs and KPIs translate organizational strategy into qualitative and quantitative measures on all management levels. Through this, the execution of the strategy can be continuously measured and adjusted. This alignment, as shown by Bart and Baetz (1998), will result in higher organizational performance.
- *Timeliness of information* – When things go wrong, CSFs and KPIs function as an early warning system, giving signals about potential issues before these actually happen or become real (comprehensive) problems. Managers can therefore better anticipate new developments because they receive better information at an earlier stage, thereby significantly lowering the chance that the problems really become life threatening for the organization. Interesting to note is that Heller (1998), during a study of the key strategies of Europe's most successful companies, found that managers of these organization used

action-oriented philosophies to add value and that they do so within the shortest possible time frames.

- *Better support of management* – CSFs and KPIs make the concepts of continuous improvement and the learning organization possible by focusing people's attention on continuous improvement and development, and by continuously raising performance expectations. Total quality management is enforced by ensuring that the expectations of external and internal customers drive the activities and performance of the people in the organization. Because managers have a better insight into and a better grip on organizational performance, cost reduction, organizational improvements, product quality, and service improvements are made possible.
- *Better communication* – A set of clear CSFs and KPIs forms a common basis for communication and discussion in the organization. This makes information transferable between departments and organizational units, making information less prone to being used as a means of executing power.
- *Aligned culture* – The availability of high-quality information at all management levels makes management by delegation possible, which speeds up the decision-making process. Better reporting enhances managers' self-management and self-control. People are more motivated because their goals and what is expected from them in regard to their behavior and performance is clear, and they get regular feedback on how they are doing in these respects. The culture of an organization is impacted because the performance management process ensures that consistency exists between what an organization says it values and what is actually measured and rewarded. In addition, information is more standardized, providing a better basis for discussion at all levels of the organization.

Managers are constantly under pressure to measure the performance of their organization, but there is little empirical evidence about the impact of such measurement on performance, as Ittner and Larcker (1998a) state. Rangone (1997), on the other hand, remarks that the link between organizational effectiveness and performance measures has been widely recognized. However, explanations for this link are constrained by the lack of clear theoretical foundations to many measurement tools and techniques and an apparent preference for description and prescription on the part of writers in the field (Holloway, 2000). Some studies do not find a clear link between the use of nonfinancial measures and organizational performance. Perera et al. (1997) reason that this could be caused by the fact that organizations might consider changes to the performance management system less important than organizational structural arrangements or that the main benefits of increasing the use of nonfinancial measures is more motivational rather than instrumental, or that performance is a complex variable with a multiplicity of factors contributing to the level of global performance at any point in time. Armstrong and Baron (1998) draw our attention to the fact that it is often easier to prove reverse causation: "We know that you cannot prove that X produces Y, but neither can you prove that it did not. For example, when a study claims to establish that there is a proven connection between performance management and measures of organizational performance, it is a matter of speculation as to whether the results in the most effective companies were created by performance management, or whether the most effective companies were the ones most likely to introduce performance management."

Nonetheless, an increasing body of anecdotal evidence can be found about the positive relationship between the use of a performance management system, based on CSFs, KPIs, and the BSC, and the performance of the organization. According to the Institute of Management Accountants (1998), some of the best companies in the world, such as AT&T, BellSouth, Bristol-Meyers Squibb, Dun & Bradstreet, DuPont, Emerson Electric, General Electric, Hewlett-

Packard, Johnson & Johnson, Merck, Motorola, Pepsico, Wal-Mart, and Xerox, cite their integrated performance management system as one of the key drivers of their success. The general tendency in the anecdotal literature seems to be that organizations that have implemented and are using a performance management system perform better financially as well as nonfinancially than those organizations that are less performance management driven. This is explained by the fact that performance measures direct attention and motivate the organization to act in a strategically desirable way. They also help management to assess progress toward strategic goals (Langfield-Smith, 1997). Finally, performance measures help an individual to see his or her part in the wider enterprise with greater clarity (Williams, 1998).

The case of Sears, Roebuck, as described by Rucci et al. (1998), shows that the nonfinancial indicator "employee loyalty" is related to customer satisfaction, which, in turn, is related to organization's growth and profits. Statistical analysis of sales data at Sears, Roebuck showed that employee attitudes drive both customer satisfaction and changes in revenue. A 5% improvement in employee attitude results in a 1.3% improvement in customer satisfaction, which in turn results in a 0.5% increase in store revenue. Independent surveys showed that national retail customer satisfaction had fallen for several years, but in the time period for which the data was analyzed, employee satisfaction at Sears had risen by 4%, and customer satisfaction by almost 4%. This translated into more than $200 million in additional revenues for that year and increased Sears' market capitalization at that time by nearly one quarter of a billion dollars.

In a research study, performed by Schiemann and Lingle (1999), senior executives from 58 organizations with a performance management system in place and operational that focused on measuring a set of financial and nonfinancial data, were asked how their organizations were ranked, compared to their peers in the industry. The same question was asked of senior executives from 64 organizations without such a performance management system. The executives' opinions – 1,000 in all – were juxtaposed with the three-year ROI of their organizations (Exhibit 2.5).

In this same study, it was observed that companies with a balanced performance management system, compared to their peers, displayed a number of cultural differences that are summarized in Exhibit 2.6.

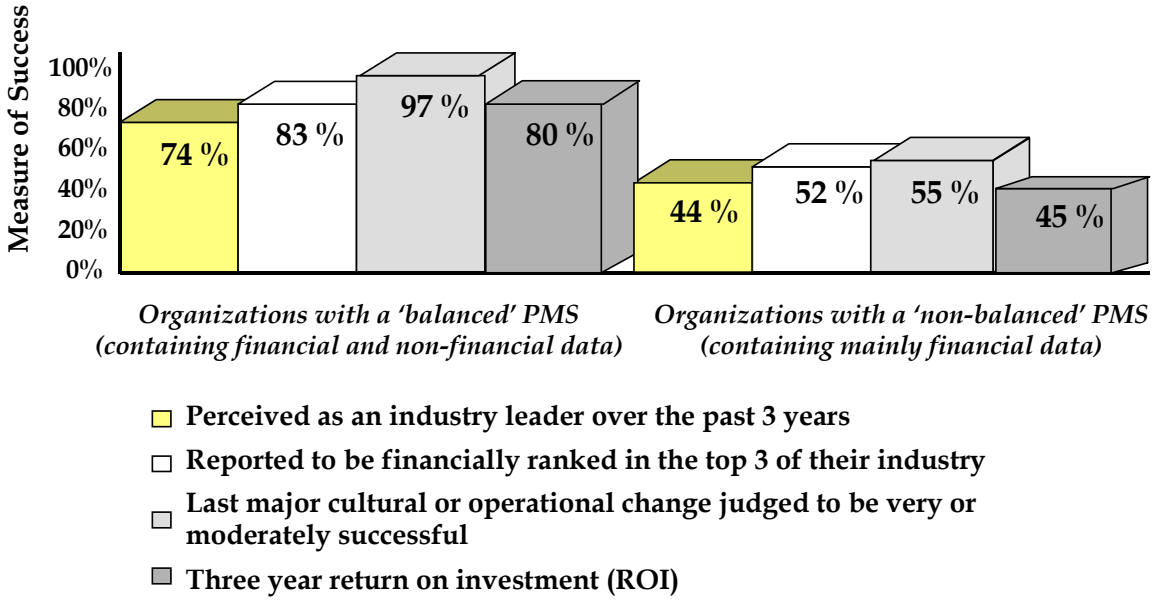


Exhibit 2.5: Relationship between performance management and organizational performance (Source: Schiemann, W.A. and J.H. Lingle, 1999, Bullseye! Hitting your strategic targets through high-impact measurement*, The Free Press, New York)*

Indicator of Organizational Success	Organizations with a "Balanced" Performance Management System (%)	Organizations with a "Nonbalanced" Performance Management System (%)
Clear agreement on strategy among senior management	93	37
Good cooperation and teamwork among management	85	38
Unit performance measures are linked to strategic company measures	74	16
Information within the organization is shared openly and candidly	71	30
Effective communication of strategy to organization	60	8
Willingness by employees to take risks	52	22
Individual performance measures are linked to unit measures	52	11
High levels of self-monitoring of performance by employees	42	16

Exhibit 2.6: Organizations with different performance management systems exhibit different cultures (Source: Schiemann, W.A. and J.H. Lingle, 1999, Bullseye! Hitting your strategic targets through high-impact measurement*, The Free Press, New York)*

In another study, the performance management processes and financial results of 437 publicly traded firms were studied (Gubman, 1998). Of the sample, 232 companies said they did not use a structured performance management system to continuously provide the organization with data about the performance of their employees but instead conducted only year-end evaluations or no evaluations at all. The other 205 companies said they did use a performance management system. The study looked at the three-year financial performance of these companies, showing a strong favorable result for the organizations with a structured performance management system (Exhibit 2.7).

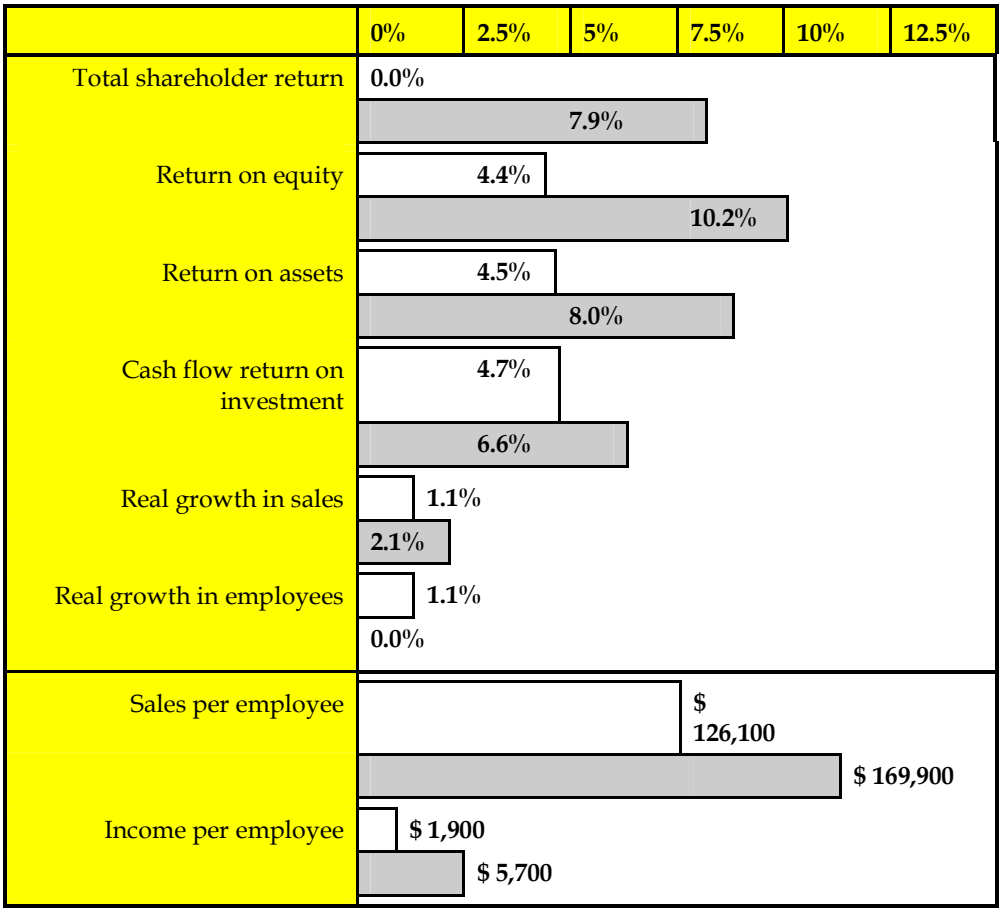


Exhibit 2.7: Comparison of organizations with a structured or an unstructured performance management system (Gubman, 1998)

In the same study, the average changes in financial ratios, before and after implementing a structured performance management system, provides evidence in favor of implementing a structured performance management system (Exhibit 2.8).

Financial Ratio	Average Before	Average After	Average Change
Total shareholder return	– 5.1%	19.7%	24.8%
Stock return (relative to market index)	– 0.13%	0.18%	0.31%
Price/book value of total capital	0.03%	0.26%	0.23%
Real value/cost	– 0.06	0.13	0.19
Sales per employee ($ 1000)	98.8	193.0	94.2

Exhibit 2.8: Changes in financial performance, before and after implementing a structured performance management system (Source: Gubman, E.L., 1998, The talent solution, aligning strategy and people to achieve extraordinary results*, McGraw-Hill, New York)*

In yet another study, Armstrong and Baron (1998) asked personnel managers, from organizations with a process to structurally and continuously measure the performance of managers and employees, how effective this performance management system was in improving the overall performance of their organizations (Exhibit 2.9). The majority of the respondents graded the effectiveness of the performance management system positively. This effectiveness was especially found in the achievement of financial targets, development of skills and competencies, and improved customer care and process quality. The conclusion of the study was that the majority of the people polled believed it was well worth the effort and expense to install a performance management system.

Effectiveness of Performance Management System	Percentage of Organizations
Very effective	7
Moderately effective	41
Slightly effective	29
Ineffective	8
Don't know/not stated	15

Exhibit 2.9: Degree of impact of the performance management system on organizational performance (Source: Armstrong and Baron, 1998, Performance management, the new realities*, Institute of Personnel and Development, London)*

A study performed by Berenschot (1999), a Dutch consultancy firm, showed that the majority of the interviewed organizations with a high financial return (measured in margin and profit) turned out to have a performance management system that contained financial as well as non-financial information, with an emphasis on exception reporting, and a strong focus on client satisfaction and market indicators. In a study of Australian manufacturing firms, Chenhall and Langfield-Smith (1998) found that financial performance measures continued to be an important aspect of the performance management system. However, these were being supplemented with a variety of nonfinancial measures. From these, as the researchers put it, high benefits were derived from customer satisfaction surveys and nonfinancial measures. Rela-

tively moderate benefits were reported for ongoing supplier evaluations, BSCs, qualitative measure, and team performance measures.

An interesting sideline is reported by Low and Siesfeld (1998). They state that major investors' decisions are significantly influenced by nonfinancial performance information. It turns out that over a third of the typical investor's allocation decisions is attributable not to the financials but to other information on performance areas perceived to be leading indicators of future profitability. These include perceptions of a company's strategic vision and the company's ability to execute it, the credibility of management, the prospects of innovations in the pipeline, the ability to attract talented people, and so on. Low and Siesfeld found that those analysts who rely heavily on nonfinancial information are the ones producing the most accurate earnings forecasts. The major implication of this is that if a firm does not strategically manage, measure, and communicate about key areas of nonfinancial performance, its operating performance and the value of its securities can suffer. This result from Low and Siesfeld is also found by Ittner and Larcker (1998a) for the relationship between customer satisfaction measures and organizational performance and stock market performance. They discovered that the relationships between customer satisfaction measures and future accounting performance generally are positive and statistically significant.

In a survey conducted by the Institute of Management Accountants (Frigo, 2000), 40% of the respondents said they were in the process of changing their performance management system. Of these, approximately 70% describe the change as a "major overhaul" or "replacement" of the performance management system. The BSC framework was reported as gaining support at many companies. Bain & Company was quoted to estimate that 55% of the U.S. companies they surveyed and 45% of the European companies used the BSC. According to the survey, approximately 40% of the respondents were currently using a BSC or planned to do so within the next year. 12 percent of these companies had been using the BSC for more than two years with positive effects (Exhibit 2.10). In the survey, approximately 83% of the respondents said that the BSC was worth implementing or "not yet, but will be", the other 17% said "too early to tell".

Statement	**BSC Users**	**Non-BSC Users**
Our compensation/incentive programs are clearly tied to nonfinancial performance measurements.	3.00	2.07
Our performance measurement system supports the corporate vision and strategies.	3.31	2.83
There are clear linkages between performance measures in our performance measurement system.	3.31	2.57

Exhibit 2.10: Respondents were asked to agree or disagree with statements about their performance management system (1 = strongly disagree, 5 = strongly agree)
(Source: Frigo, 2000, 'Current trends in performance measurement systems'. *In: A. Neely, ed.,* Performance measurement – past, present, and future, *Centre for Business Performance, Cranfield University, Cranfield)*

Mavrinac and Vitale (1997) interviewed ten of the original 12 companies, as described by Kaplan and Norton in their first article published in 1992, on how they have done since the implementation of the BSC and what their experiences were. Half of the companies reported their BSC implementation to be a "resounding success", measured either in financial or cultural terms. Mavrinac and Vitale found clear differences among the ten companies, so they divided the organizations into two groups, each with distinct characteristics. One group mainly implemented the BSC to improve organizational performance in quantitative, financial terms (drive value). The other group focused on organizational performance improvement in qualitative, nonfinancial terms (drive values). The research results are summarized in Exhibit 2.11.

Research Question	**"Drive Value" Organizations**	**"Drive Values" Organizations**
Aim of scorecard	Drive financial success.	Effect cultural change.
Project approach	Explicit project, small team, proposal of measures, guide implementation.	Explicit project, small team, proposal of measures, guide implementation.
Layout and content of scorecard	Kaplan & Norton perspectives, with measures derived from the strategy.	Interactive process, based on a perceived, not a concise strategy, resulting in different number and sort of perspectives.
Sort of measures	Initially too many. Measures that are explicitly and quantifiably linked to the strategy. Nonfinancial measures that produce objective, accurate values. Index measures for trend analysis. Outcome measures.	Measures that "telegraph" what really matters to the organization's success. Outcome and activity measures.
Aggregation of measures	No, aggregation of financials obscure real performance. Seek or "logical" rather than arithmetic connection of division results to corporate performance.	No, aggregation of financials obscure real performance. Seek or "logical" rather than arithmetic connection of division results to corporate performance.
External disclosure of values	No, not yet. Legally too risky and investors look for other sources of nonfinancial information.	No, not yet. Legally too risky and investors look for other sources of nonfinancial information.
Link to individual pay	Yes, when previous performance management systems were already linked, otherwise no. If yes: specific linkages between pay and performance on the scorecard aspects.	Yes, when previous performance management systems were already linked, otherwise no. If yes: based on broadly based gain (and risk) sharing plans.
Replacement of old performance management systems	Many old measures are included (familiar, linked with human resource processes).	Many old measures are included (familiar, linked with human resource processes).
Resistance	Modest/evolutionary or full-scale replacement: little resistance.	Modest/evolutionary or full-scale replacement: little resistance.

Research Question	"Drive Value" Organizations	"Drive Values" Organizations
Implementation worthwhile?	Half of the companies: "a resounding success". Bottom line has improved for some and for others not yet. Success in: - fundamentally changing the bottom line - focusing employee attention on strategic priorities and the leading indicators of financial success - new visibility and better management of the value chain.	Half of the companies: "a resounding success". Bottom line has improved for some and for others not yet. Success in: - realizing substantive change in employee orientation and the corporate beliefs system - shift in organizational culture - employees better in prioritizing multiple change projects - boosts in employee morale, customer satisfaction and product quality.

*Exhibit 2.11: Experience of original BSC companies (Source: Mavrinac and Vitale, 1997, '*Where are they now? Revisiting the original balanced scorecard firms'*, Measuring Business Performance, 2)*

In their latest book, Kaplan and Norton (2000) also revisit the pioneer organizations of the BSC. They report that these organizations "enjoyed substantial benefits from their new strategies early in their implementation activities." Examples are given of organizations going from years of below-average performance to first in their niche or industry in both growth and profitability, with the turnaround accomplished within two years of introducing a new strategy, a new organization, and the BSC performance management process. Kaplan and Norton argue that "the BSC made the difference. Each organization executed strategies using the same physical and human resources that had previously produced failing performance. The strategies were executed with the same products, the same facilities, the same employees and the same customers. The difference was a new senior management team using the BSC to focus all organizational resources on a new strategy."
All in all, the anecdotal literature starts to give more and more proof that implementing a performance management system can yield many benefits also in financial terms. This gives a compelling argument for organizations to implement such a system.

2.4 ISSUES WITH CRITICAL SUCCESS FACTORS, KEY PERFORMANCE INDICATORS, AND THE BALANCED SCORECARD

One may wonder why, if there are so many advantages to using CSFs, KPIs, and the BSC, has not yet every organization implemented these. This could be because the implementation and use of these types of measures is not easy. As Otley (1994) remarks: "It seems clear that the BSC approach has something to offer, but also that the study of management control is more complicated and more contingent than previously recognized." Another reason may be, as Neely (1998) contemplates: "The traditional view of measurement as a means of control is naive. As soon as performance measures are used as a means of control, the people being measured begin to manage the measures rather than performance." The main issues described in the literature (Jowett and Rothwell, 1988; Haselbekke et al., 1990; Jaworski and Young, 1992; Van Helden, 1991; Smith, 1995; Hope and Hope, 1995; Van Harten, 1996; Ashton, 1997; Epstein and Manzoni, 1997; Vosselman, 1999a; Holloway, 2000) are grouped in four main problem categories, as given by Merchant (1998), and in one extra, fifth category:

1. *Behavioral displacement* – The performance management system encourages behaviors that are not consistent with the organization's strategy and objectives. There are many examples of this. Managers pursue narrow local objectives, at the expense of the objectives of the organization as a whole (*suboptimization*). On top of this, the priority areas of strategic importance to the organization to target for performance measurement systems may be strongly contested. In addition, many outputs are the result of team rather than individual efforts. As a result, if the implicit reward structure is directed at individuals, suboptimization can arise. There is an inherent trade-off between the beneficial incentive effects of a formal control mechanism and the dysfunctional consequences of suboptimization. Managers pursue short-term targets at the expense of legitimate long-term objectives (*myopia***)**. This is caused by the fact that performance indicators are imperfect reflections of the efficacy of current management because they can indicate the results of managerial endeavor over many years, and they cannot always reflect the future consequences of current managerial actions. The problem is exacerbated by the short-term career perspectives of many workers. According to Merchant (1998), myopia is potentially the most damaging problem. Managers emphasize measures of success rather than the underlying objective (*measure fixation***)**. If a measure does not fully capture all dimensions of the associated objective, managers may be encouraged to pursue strategies that enhance the reported measure rather than further the associated objective. Finally, management emphasizes phenomena that are quantified in the performance management system, at the expense of nonquantifiable aspects of performance (*tunnel vision*). Most organizations usually hold a large number of diverse objectives and it is often impractical or impossible to identify and track all of these objectives. It is impossible to devise a managerial reward structure that satisfactorily reflects achievement in more than three or four dimensions. In addition to that, specifically for the public sector, ramifications of public sector services extend well beyond the immediate target of service delivery.
2. *Gamesmanship* – Managers take actions that are intended to improve their performance indicators without producing any positive economic effects for the organization. Managers deliberately manipulate data so that reported behavior differs from actual behavior. For instance, by minimizing the apparent scope for productivity improvements, as any reported improvement in one year will result in increased expectations (and targets) for future years. Gaming can come in the form of "creative reporting" and fraud. If excessive reliance is placed on KPIs to control the organization, there is clearly an incentive for managers to manipulate the data under their control to show their organization's performance in the most advantageous light (*misrepresentation*). In addition, managers can adjust their activities in such a way that measurements on irrelevant KPIs lead to satisfactory results. This misrepresentation of results may lead to misallocation of resources and inequitable treatment of staff and clients. Although in possession of all the facts, the manager might systematically misinterpret them and, thereby, send the wrong signals to the superior (*misinterpretation*). This can be caused because the KPI reporting that is provided by the financial department is incomprehensible for managers. In addition to that, evaluation of performance measurement activities is often constrained by a lack of understanding of causal links between performance measurement and performance improvement. Finally, top management does not use the BSC consistently and reverts back to discussing financial measures when things go bad (*regression*). This happens in part due to their ability with financial measures.
3. *Operating delays* – These are caused by administrative and bureaucratic procedures installed to exercise control, like requiring an excessive number of signatures on a requisition form. These delays create frustration with and resistance to the performance management

system. A special form of delay, called inertia, occurs when there is not enough attention for following up on the results on KPIs. Employees are not given (enough) feedback on their results and action is not taken on lagging results. There are no other control mechanisms in place that support the performance management system, such as human resources systems that reward good results on KPIs, accountability structures that make clear who is responsible for which KPIs, and a regular review of the quality of management in dealing with KPIs. Organizational paralysis is brought about by an excessively rigid system of evaluation, thus inhibiting innovation. This danger arises due to the inevitable delay in designing and putting in place an evaluation scheme and the effort required to change it subsequently.

4. *Negative attitudes* – The performance management system causes negative attitudinal effects like job tension, conflict, frustration, and resistance because managers do not want to feel controlled or think that the performance management system is not effective, sensible, or ethical. Managers object to being evaluated and judged by outsiders or other people in the organization (*clouding the transparency*). Zairi (1996) calls this a "perceived reduction in autonomy": people object to sharing their knowledge of the processes they have been put in charge of. That is why they object to KPIs, which make their performance transparent. In addition to this, managers constantly question the relevance of KPIs and also question the economical foundation of the KPI calculations (*beating the system*). They simply label the management information as "plainly wrong". Managers also state that the KPIs are not an accurate representation of their activities, that targets have been set in the wrong way, or that measuring nonfinancial indicators does not lead to increased profitability or growth. Many times managers have developed their own sources of information. In addition, selecting relevant and valid approaches that are also culturally and politically acceptable in the organization can be highly problematic (*cultural mismatch*). Schiemann and Lingle (1999) speak of cultural barriers, where organizations approach performance measurement based on tradition and the accepted way of doing things. These traditions or embedded cultural norms are formidable barriers to change and can cause many negative feelings.
5. *Structural deficits* – Development methods that work well in some organizations may fail to deliver in apparently similar organizations (*incompatibility*). As Lewy and Du Mée (1998) remark: "Do not go from the assumption that implementation can take place with a standard approach, it will stay made to measure." In addition to this, the system can be(come) too complex with too many separate measures, causing *indicator overload*. Pfeffer and Sutton (2000) state that people can keep only about seven things in their heads at any one time. This means that having many indicators dilutes the attention people can pay to any single issue or even a small set of issues. Structural deficits can already be created during the implementation phase, when the provision of resources (time, skill, and information) for systematic implementation is resisted from above and below, and, consequently, is inadequate for the implementation project (*resource shortage*). Also, many organizations have a track record of starting and later abandoning initiatives such as the BSC. Many employees may have grown weary of such change efforts.

Many of the problems described above can be seen, as Holloway (2000) calls them, "facts of organizational life" that are related to change management, culture, and power. These may be addressed merely by practitioners acknowledging these issues and being sensitive to them when designing performance measurement systems, applying techniques that have established theoretical bases together with managerial flair. The problems reflect the natural evolutionary cycle that is, according to Neely (2000), at work in the development of theory and practice in the field of performance management systems: "In the late 1980s and early 1990s,

managers were concerned that they were measuring the wrong things. Hence, they began to explore and then adopt new and alternative measurement frameworks, such as the BSC. Throughout the 1990s, they struggled to implement these measurement frameworks. Now the most advanced organizations appear to be asking the next question in this natural evolutionary cycle – namely, how do we use the data provided by our measurement systems."

2.5 IMPORTANCE OF BEHAVIORAL FACTORS

The answer to Neely's question – of how to use the data provided by measurement systems – may very well lie with performance management system users themselves. A common thread through the issues described above seems to be the way a manager views information, uses information, and deals with other people while utilizing information. Beer (1997) comments in this respect: "Implementation of technical or structural solutions depends on organizational and human factors that the research and theory did not incorporate. Few management scholars specify the conditions and processes managers might use to implement their theories, concepts and methods." And Van Egten (1996) states that management styles, like knowledge, skills, and individual motives and experiences are important to the use of management information. Zairi (1994) goes even further when he states that at the heart of the problem of performance measurement is the human element.
Ashton (1997) quotes the American Productivity & Quality Center's International Benchmarking Clearinghouse: "People issues appear to be 'make or break' factors in success – deliberate, targeted and ongoing communication strategies are crucial, along with education and reinforcing a central question: how does individual effort relate and contribute to business strategy?" Simons (2000) states that performance measurement and control systems cannot be designed without taking into account human behavior, and Holloway et al. (1995) remark that the successful implementation of performance measurement approaches depends on understanding and accommodating the human element in performance measurement.

The fields of study called behavioral accounting and reliance on accounting performance measures (RAPM) concentrate on the behavioral and organizational effects of using accounting information for the performance evaluation of subordinate managers (Vosselman, 1999b). They also signify the extent to which superiors rely on and emphasize those performance criteria that are quantified in accounting and financial terms and are prespecified as budget targets (Hartmann, 2000). RAPM is a substantial departure from the mechanical approach to performance measurement, found in traditional management theory. Through RAPM, the issue of the human element receives more attention in literature, although a lot of this attention is still focused on its relationship to the budgeting system. In this respect, Hartmann (2000) remarks that personality factors have been mentioned before as important determinants of management styles and attitudinal reactions to budgeting. For this reason, likely candidates for investigation are personality variables related to individual preferences for risk and uncertainty. Vodosek and Sutcliffe (2000) point in the direction of examining how managerial and contextual characteristics affect decision-makers' interpretations, taking into account - decision-makers' ideologies and beliefs. And Vagneur and Peiperl (2000) state that it is well worth exploring individual psychological responses to performance assessment and the nature of the systemic effects created by other formal and informal management control processes, such as reward, planning, training, and information systems. According to them, this would require synthesis of two levels of analysis (individual and system) as well as consideration of psychology, organizational behavior, behavioral accounting, and systems theory

research. They conclude that this area presents an exciting and significant opportunity to shape the next stage in the development of the stream of research.

Kaplan and Norton (1996a) critique the traditional performance management systems because it incites managers to display counterproductive behavior. However, as Gelderman (1998b) warns us, the BSC as proposed by Kaplan and Norton can do the same. According to Gelderman, this is because managers are ignored when a BSC is set up. In general, the design of the BSC is predominantly determined by the characteristics of the organization and its strategy. The characteristics of performance management system users are generally not taken into account, although it would make sense to do so. The way managers handle information and their personalities could very well designate the design of the performance management system. Gelderman states that without further research and compelling evidence, these variables should not be ignored. In earlier research, Benbasat and Dexter (1979) mention that an understanding of how psychological types may influence information-use behavior could lead to better information system designs based on an understanding of the users' characteristics.

Special attention should then be paid to the behavioral issues surrounding the use of a performance management system (Gelderman, 1998c; Wiersma, 1998; Williams, 1998, Vosselman, 1999b). Unfortunately, there are not many concrete examples in the literature of the importance of the human element to the use of a performance management system (Jones, 1999). A reason for this lack may be, as Kloot (1997) states, the influence of the widely adopted definition of management control of Anthony (1965). Kloot remarks that although Anthony specifically suggested that the study of control should be broadly based in the behavioral sciences, his work showed little evidence of borrowing from behavioral sciences. Consequently, control has popularly taken on the connotation of accounting control and the study of control systems has become overly narrow by remaining primarily focused on accounting control mechanisms (Otley, 1994). Another reason, according to Pfeffer and Sutton (2000), is that many organizations still operate using an oversimplified or incorrect model of human behavior that has become institutionalized in certain types of measures and measurement systems. These systems have, according to Pfeffer and Sutton, become a signal of competent management and are so widely diffused that firms are reluctant not to follow them.
However, most authors who mention the importance of the behavioral factors go from the assumption that addressing these are crucial and beneficial for a successful implementation and use of a performance management system (Holloway et al.,1995; Van Egten, 1996; Vosselman, 1999a, Simons, 2000).

3 Phase I – Identifying Behavioral Factors

In Chapter 2, a description was given of the literature research performed in phase I. Based on this research, an assessment was made of the need to identify behavioral factors that are important to successful design, implementation and use of a performance management system. In this chapter, these behavioral factors were described. After that, research questions were drafted on the basis of the literature studied and the identified behavioral factors (Exhibit 3.1).

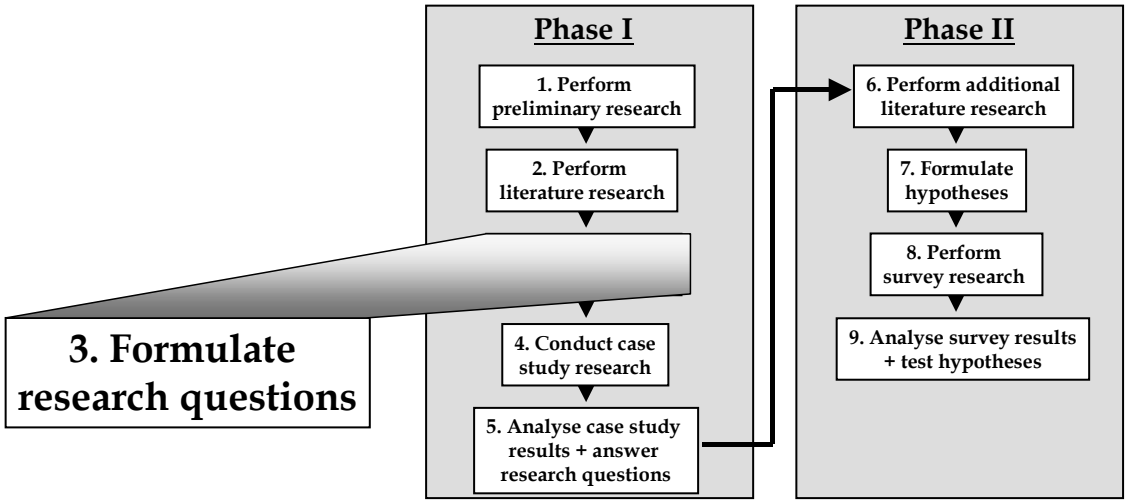


Exhibit 3.1: Research stage described in Chapter 3

3.1 CRITERIA FOR REGULAR USE

Since the objective of the study is to identify which behavioral factors are important to the successful implementation and use of a performance management system, criteria for regular use have been formulated on the basis of literature on applied research (Bruijn, 1994; Gelderman, 1998a, 1998b). These criteria denote when use of the performance management system, and its critical success factors (CSFs), key performance indicators (KPIs), and balanced scorecard (BSC) is valuable to the organization and its managers. The criteria are a mix of tangible and intangible benefits but focus more on the intangibles (Mooraj et al., 1999).
In the criteria for regular use the ideas of Lewy and Du Mée (1998) are included, who argue that successful implementation and use of a performance management system does not necessarily mean that the organization has its performance management system embedded in the planning and control cycle with periodic reporting and discussion. In their opinion, a successful implementation and use of a performance management system can already be achieved when the managers have an intensified awareness of the importance of the performance management system. The criteria for regular use are given in Exhibit 3.2, in the format of interview questions.

Criteria for Regular Use
Are the results of the organization, according to managers, improved through the use of the performance management system?
Are the results of the organization, objectively, improved through use of the performance management system?
Has the degree of performance management system use by managers increased?
Are there plans for follow-up projects?
Is there a difference in manager attitude toward performance management, from project start to currently?
Is there regular communication about KPI results?
Are the CSFs, KPI, and BSC incorporated in the regular management reporting?

Exhibit 3.2: Criteria for regular use

3.2 BEHAVIORAL FACTORS

As was stated before, many behavioral factors can contribute to the successful implementation and use of a performance management system. In order to make the research into these behavioral factors manageable, they have been grouped and arranged in a classification scheme (Exhibit 3.3).

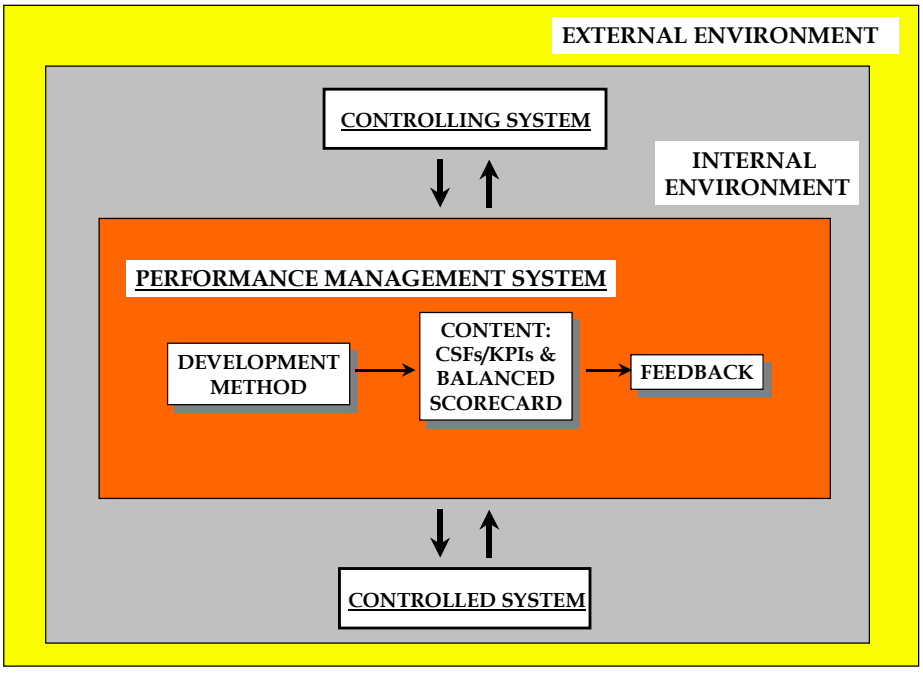


Exhibit 3.3: Classification scheme of behavioral factors

The classification scheme is developed by linking the factors of effective control as given by De Leeuw (1990), with the control cycle of performance measurement as given by Van Tuijl et al. (1995). De Leeuw has a system vision on organizational and management issues. His model is based on the concepts of controlled system (i.e., a manager) and controlling system (i.e., the superior of a manager). Efficient management control is determined by the degree of manageability of the controlled system and the management capacity of the controlling system (Van Looij, 1996; Williams, 1998). The internal environment and the external environment also have influence on the degree of control effectiveness. For effective control, the controlled system and controlling system both need a performance management system. Through the performance management system, the controlling system gets information about the performance of the controlled system, and the controlled system obtains information about its own performance.
The model of De Leeuw contains preconditions for effective control. However, these have not been tailored specifically to a performance management system. For this reason, the model was supplemented by the control cycle of performance measurement as described by Van Tuijl et al. (1995). This control cycle details the performance management system into several parts. The development method part describes the way in which the performance management system is developed. The content part stipulates the quality criteria that the performance management system, and the CSFs, KPI, and BSC it contains, must meet in order to be relevant to both the controlling and controlled system. The feedback part describes the way in which information from the performance management system is conveyed to both the controlling and controlled system.

After looking at the abundance of behavioral factors described in the literature, it becomes clear that the classification scheme is still too high-level to be really manageable. That is why further detailing of the scheme into subparts is needed. However, as Groot et al. (1998) and the American Productivity & Quality Center (1999a, 1999b) remark, the literature describes a lot of empirical research but this did not yet result in one coherent, generally accepted framework for a performance management system. Von Cotta-Schønberg (1995) agrees that there still is not any "correct" terminology. One "perfect" performance management system framework might not even be possible, as Moon and Fitzgerald (1996) state. According to them, the reason for this is that the system must be matched with the circumstances of an organization and that consequently its performance management system should vary according to a wide range of variables. In today's complex business environment it is then unlikely that any two organizations adopt performance management systems that are identical.
To get out of this impasse, the subparts of the scheme are put together from elements that are derived from the multitude of methods, especially described in literature on applied research, for developing a performance management system based on CSFs, KPI, and the BSC. Similar elements from these methods are grouped under one subpart. Applying this method of working assures that all the important parts in the classification scheme are included. The results of the literature review are summarized in Exhibit 3.4 and described in more detail in Appendix A.

Classification Scheme Part	Subpart
Performance management system – Development method	Development method
Performance management system – Content	Quality (criteria for indicators)
	Registration (of indicators)
	Purpose (of indicators)
	Targets (for indicators)
	Balance (of performance management system)
Performance management system – Feedback	Feed forward (with prognoses)
	Feedback (through reporting)
Controlled system	Management level
	Management style
Controlling system	Responsibility
	Supervision (by promoter)
	Relationship with controlled system
Internal environment	Alignment (with strategy and business processes)
	Organizational culture (including structure)
External environment	External environment

Exhibit 3.4: Subparts of the classification scheme

The abundance of behavioral factors means that for each subpart of the classification scheme, a selection had to be made of these factors in order to keep the scope of the case study research manageable. Criteria for including certain behavioral factors are described in Appendix B. In the remainder of this section, the selected behavioral factors are described for each subpart. The behavioral factors are derived from the requirements that, according to the literature, have to be taken into account during the development, implementation, and use of a performance management system.

3.2.1 Performance Management System – Development Method

The performance management system has to be developed in a structured manner. The development method constitutes a description of the way in which the performance management system and its CSFs, KPIs, and BSC must be developed and imbedded in the organization (Exhibit 3.5). Included in the description are the project approach, assembly of the project team, starting time of the performance management system project, and a change management approach.

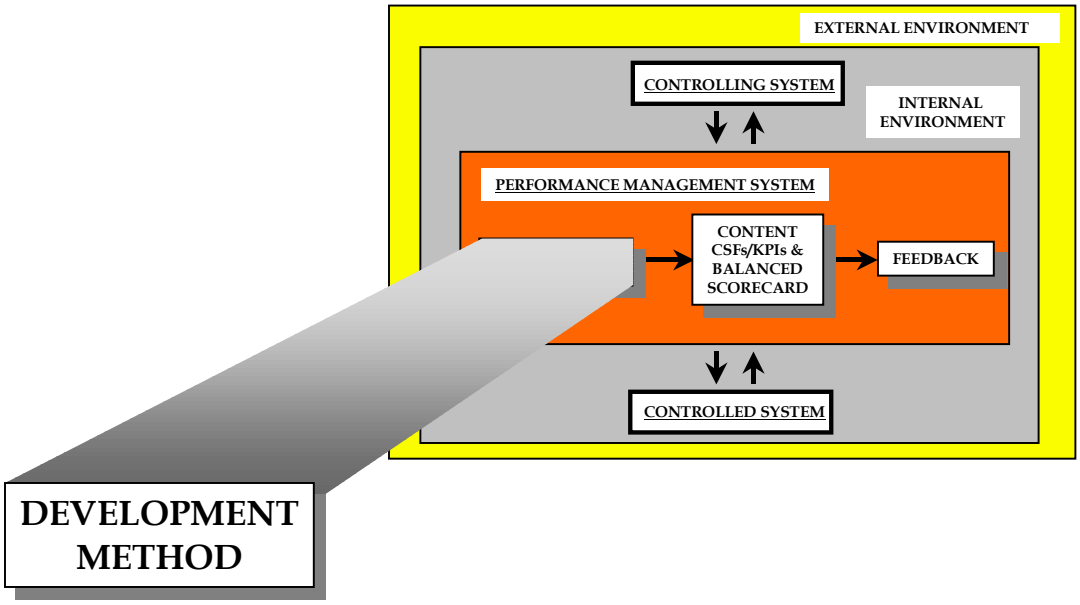


Exhibit 3.5: Behavioral factors for Performance management system – Development method

The development of the performance management system is not just a technical issue; many change management issues also come into play. Managers often do not (readily) understand the performance management system, do not understand why so much effort should go into "just another system", or are afraid the system makes their performance (too) visible. This can cause resistance, which frustrates the introduction of the system (Meekings, 1995). Investing in the creation of a support base for the performance management system during the development stage is for this reason very important (Hiemstra, 1995; Lewy and Du Mée, 1998). This can be done by showing the reasons and goals for introducing the performance management system to the managers (Williams, 1998; Olve et al., 1999; Buckley and Watkins, 2000). These reasons can be: the continuity of the organization is at stake (e.g. due to bad financial results); dissatisfied customers; worse benchmark figures than the competition; current management reporting does not provide enough insight into the execution of the strategy and crucial business processes; or it costs too much effort to generate the current management reporting while managers are discontent with the content of the reports. A performance management system could give insight into these issues and help managers solve them, so the continuity of the organization and of their positions is guaranteed. If managers are convinced by these arguments, they will support the implementation of performance management and the performance management system (Du Mée, 1996a; Van der Meer-Kooistra and Vosselman, 2000). The requirements described above are in this research combined into the behavioral factor: *Managers accept the need for performance management.*

Future users of the performance management system can participate during the performance management system development stage in two ways. Active participation entails the identification of CSFs and KPIs by the users themselves, for their own responsibility areas (Likierman, 1993). Passive participation entails the users giving feedback on the CSFs and KPIs, identified by a project team. Whatever the manner of participation chosen, users from many organizational disciplines should be involved as early as possible (Economist Intelligence Unit, 1994; Zairi, 1996). Involving many disciplines results in a broader acceptance base for the

performance management system and in a better coverage of the important business functions by the performance management system. Involving users at an early stage gives them a better possibility to influence the end results. An additional benefit is that users get a clear insight into the mission and strategy of the organization and how they can influence these to obtain a better organizational performance (Twijnstra Gudde, 1995). Involvement in the development of CSFs, KPIs, and the BSC increases the motivation of users to use the performance management system due to their input in the design of the performance management system (Bonnet and Krens, 1994). An active role also prevents the "not invented here" syndrome, in which users get new things forced on them. The requirements described above are in this research combined into the behavioral factor: *Managers have an active role during the development stage of the performance management system project*.

Choosing the right starting time for the development of a performance management system is crucial for the acceptance of the system (Fisher, 1992; Olve et al., 1999). The organization and its managers have to be ready for such a far-reaching project. If the organization does not have a clearly defined mission and strategy, if there are many operational problems, or if there are not enough resources, then it is probably better to wait with the development of the performance management system until a more appropriate starting time. In the organization there has to be a consensus that the chosen starting time is indeed appropriate. An appropriate starting time is when managers have enough time to spend on the project or when there is a clear, urgent need for better management information. Managers have to be involved in the decision about the starting time, so they have a better insight into the decision-making process and also can guarantee their participation. If there is no consensus or if managers have not been involved in the decision about the starting time, they may resist the project and may not cooperate. The requirements described above are in this research combined into the behavioral factors: *Managers agree on the starting time* and *Managers have been involved in decision making about the project starting time.*

Regular and structured communication needs to take place with all persons involved in the development of the performance management system (McMann and Nanni, 1994; Compeer, 1996; American Productivity & Quality Center, 1997b; Mooraj et al., 1999). There should not be only communication about the reasons for the introduction of the performance management system and about intermediary project results, but also about daily project activities (Kerklaan et al., 1994). For this, a communication plan is needed, describing the communication moments, content, communication manner (formal or informal), and communication receivers. An integral part of the communication should be a feedback mechanism from the organization to the project team, so a dialogue between the two is set up.
A change in management information and the performance management system can lead to uneasiness and unrest in the organization. For instance, the unexpected confrontation with results on KPIs can cause great resistance by managers. Regular communication increases managers' knowledge about the project (unknown, unloved) and can defuse a potential time bomb under the project. An added benefit of regular communication is that managers get a better insight into the motives to introduce the performance management system (Armstrong and Baron, 1998). Communication will have a positive influence on the degree of acceptance of the system, which will even more increase when future users of the performance management system themselves participate in the communication process. The requirements described above are in this research combined into the behavioral factors: *Managers are informed about the status of the performance management system project* and *Managers are actively communicating about the performance management system project.*

3.2.2 Performance Management System – Content

The content of the performance management system can originate from different sources and must meet certain standards (Exhibit 3.6). The content has to be of good *quality*: CSFs and KPIs have to be clearly defined, valid, relevant, and measurable. In order to be able to report KPIs, *registration* of relevant data has to take place: data must be collected, calculated, and stored in the performance management system. The CSFs, KPIs, and BSC need a clear *purpose*, which is the monitoring of the execution of the strategy, of the performance on critical business activities, and of significant (temporary) developments in the internal and external environments. The CSFs and KPIs must be in *balance*, which means that they monitor all relevant and critical aspects of the business. Finally, all the KPIs need to have *targets*, so that the performance levels the organization strives for are clear.

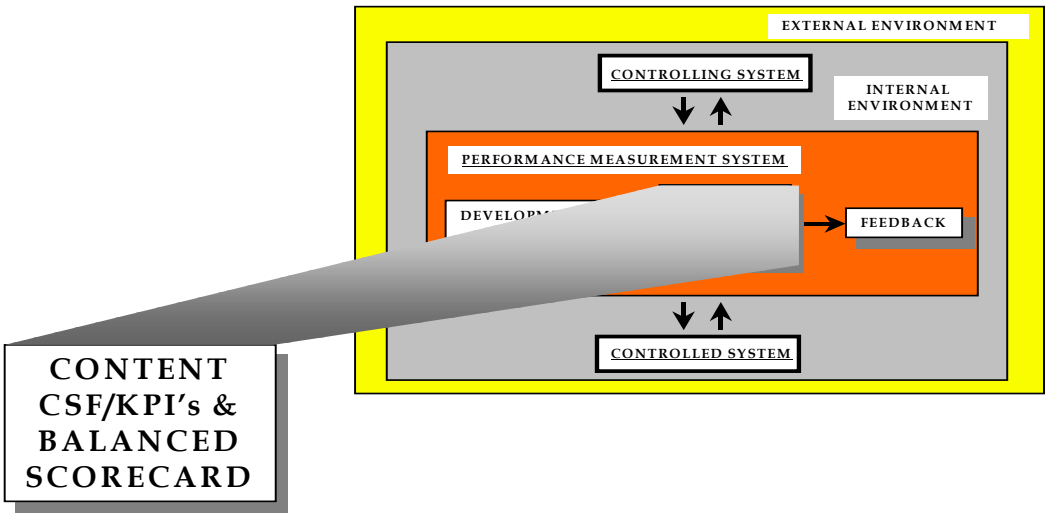


Exhibit 3.6: Behavioral factors for Performance management system – Content

Performance Management System – Content: Quality

KPIs must be defined clearly, which means that they need to have an intelligible and consistent definition (Tipping, 1998; Olve et al., 1999). A KPI is intelligible for managers if it is defined in terms that they understand and that match their daily practice (Tuijl et al., 1995), and when the indicator is not complex (McMann and Nanni, 1994; Kröger et al., 1998). In this way, the KPI is understood by the managers who have to work with them. Managers can also better judge the effect their activities have on the KPI result and tailor their activities to get a better result or tailor the KPIs so they better represent their responsibility areas. A KPI definition is consistent if the definition stays the same through time. This is important for making relevant and meaningful comparisons over time. A KPI that is defined in an unclear, vague, or overly technical way causes confusion and misinterpretation. A good way to increase the understanding of managers is to involve them in defining their own KPIs. This will also increase the support for the new indicators. The requirements described above are in this research combined into the behavioral factors: *Managers understand the meaning of KPIs* and *Managers are involved in defining KPIs.*

It is to be expected that the results attained on KPIs will lead directly or indirectly to financial consequences (Wiersma, 1998). According to the American Productivity & Quality Center (1999a), best practice organizations are able to display relationships among their performance management systems, human asset management results (e.g. retention, development, succession planning) and, to a lesser extent, financially driven business results. In addition, the relationship between nonfinancial indicators and financial results is often unclear and difficult to quantify for managers (Schneiderman, 1999). In practice, managers often stick to financial indicators that have an explicit and clear relationship with the financial result. As a consequence, the softer indicator such as client satisfaction or employee motivation is often left out. These indicators, however, are crucial to the continuity for an organization because they are indicators of future profitability and added value: a bad result on them will eventually lead to a bad financial result (Ashton, 1997). If relationships, however difficult, can be established between nonfinancial indicators, actions taken on these will improve the organization's financial results, and acceptance of these types of KPIs by managers will increase (Hackett, 2000). These relationships will also make it more clear to managers what the financial consequences of their activities will be (Economist Intelligence Unit and Arthur Andersen, 1998). The requirements described above are in this research combined into the behavioral factor: *Managers have insight into the relationship between KPIs and financial results.*

Performance Management System – Content: Registration

The data needed to calculate the results on the KPIs can be derived from several sources. They can be registered internally, manually or via internal information systems, or they can come from external sources, like opinion polls, market surveys and Nielsen ratings (Geanuracos and Meiklejohn, 1994). Often, there is a preference in the organization to define KPIs that can be calculated from existing (operational and financial) data sources and information systems because these do not take too much effort to report (Likierman, 1993). In itself, this is not a shortcoming as the organization has a lot of valuable information that should not be ignored in the performance management system (Kerklaan et al., 1994; Brancato, 1995). However, an organization should not base its information supply solely on operational and financial indicators. Instead, it should also include important nonfinancial indicators that may not be readily available, like client satisfaction and employee satisfaction, in its management reporting. Because at many organizations it takes great effort to generate data for many of the nonfinancial indicators, the result is often new management information that more or less resembles the old information set. Consequently, supplementary procedures and systems are needed to guarantee an automatic supply of nonfinancial indicators (Olve et al., 1999). This will save a lot of time and effort of managers in collecting and reporting this type of information, preventing managers from thinking of nonfinancial reporting as an extra workload and decreasing the chance of their resisting the performance management system (Tuijl et al., 1995). The requirements described above are in this research combined into the behavioral factor: *Managers do not get discouraged by the collection of performance data.*

Performance Management System – Content: Purpose

The strategy of an organization can be operationalized and made tangible by defining CSFs and KPIs (Van Harten, 1996; De Waal and Bulthuis, 1996; Ashton, 1997). Because the strategy indicates the long-term goals of the organization, these CSFs and KPIs foster thinking about long-term performance. In addition, by using these CSFs and KPIs, managers are better able

to see which results the organization obtains, having a motivational effect. For this to work, there needs to be consensus among managers about the strategy; the strategy must be translated in operational goals that incite action; and there must be a clear linkage between these operational goals, organizational performance, and organizational strategy (Economist Intelligence Unit and Arthur Andersen, 1998; Eagleson and Waldersee, 2000). The requirements described above are in this research combined into the behavioral factor: *Managers have insight into the relationship between strategy and CSFs/KPIs.*

Besides the strategy, the business processes of an organization can also be the basis for CSFs and KPIs (Torremans, 1993; Geanuracos and Meiklejohn, 1994; Lynch and Cross, 1995). Because (especially complex) organizations dispose of a great variety of business processes and activities, The Economic Intelligence Unit (1994) and Jägers (1996) explicitly talk about only taking the crucial processes and activities as the basis for the indicators. Crucial processes and activities are defined by them as those that are critical for the continuity of the organization. Measuring these processes with tangible KPIs makes it easier for managers to see how their performance on these activities influence the overall performance of the organization on crucial business processes. The requirements described above are in this research combined into the behavioral factor: *Managers have insight into the relationship between business processes and CSFs/KPIs.*

Performance Management System – Content: Targets

Targets are the performance levels an organization strives for (Van Tuijl et al., 1995). Managers are involved in the process of target setting if they (the controlled system) have the freedom to negotiate the targets with their superiors (the controlling system) (Kampfraath and Mast, 1992). During this negotiation, managers and superiors exchange information about the nature and feasibility of the targets (Shields and Shields, 1998). In addition, managers have the opportunity to influence the expected performance levels. This results in a greater degree of understanding of what is expected and a higher acceptance by managers of the agreed-upon performance levels (Algera et al., 1992; Tuijl et al., 1995; Moon and Fitzgerald, 1996; Scott and Tiessen, 1999). Managers are also more motivated to reach the agreed-upon targets, resulting in better overall organizational performance. However, Schneiderman (1999) comments that targets should not just be the result of negotiations without taking into account stakeholder requirements, fundamental process limits and improvement process capabilities. And Dunk (1990) warns that managers, when participating in setting targets, might be tempted to manipulate the process in order to obtain easier targets. The requirements described above are in this research combined into the behavioral factor: *Managers are involved in setting KPI targets.*

Performance Management System – Content: Balance

The set of defined CSFs and KPIs has to provide a well-balanced overview of the actual performance of an organization. This means that a performance management system must be created that contains not only financial but also nonfinancial indicators; not only quantitative but also qualitative indicators (Ghobadian and Ashworth, 1994); not only internal but also external indicators (Price Waterhouse Financial & Cost Management Team, 1997; Vodosek and Sutcliffe, 2000); and not only short-term but also long-term indicators (Likierman, 1993; Ashton, 1997). Indicators have only a signaling function. They give an abstract and partial view of reality. It is not possible to provide a complete view with one indicator. Consequently,

managers need a balanced set to get an overview of their responsibility areas. Such a set makes it possible for managers to explain the results in their responsibility areas in a multi-dimensional way and to see the cause–and–effect relationship between their activities and their results (Tuijl et al., 1995; Olve et al., 1999; Shulver et al., 2000). The requirements described above are in this research combined into the behavioral factors: *Managers' KPI sets are aligned with their responsibility areas* and *Managers have insight into the relationship between cause and effect.*

3.2.3 Performance Management System – Feedback

As soon as an organization starts using the performance management system, information about performance on the CSFs and KPIs must be reported. Managers receive *feedback* information in the format of management information on realized performance (Exhibit 3.7). Feedback makes it possible for managers to analyze results and take corrective actions. Managers receive *feed forward* information in the format of prognoses on expected performance. Feed forward makes it possible for managers to make estimations about future results and to take preventative action.

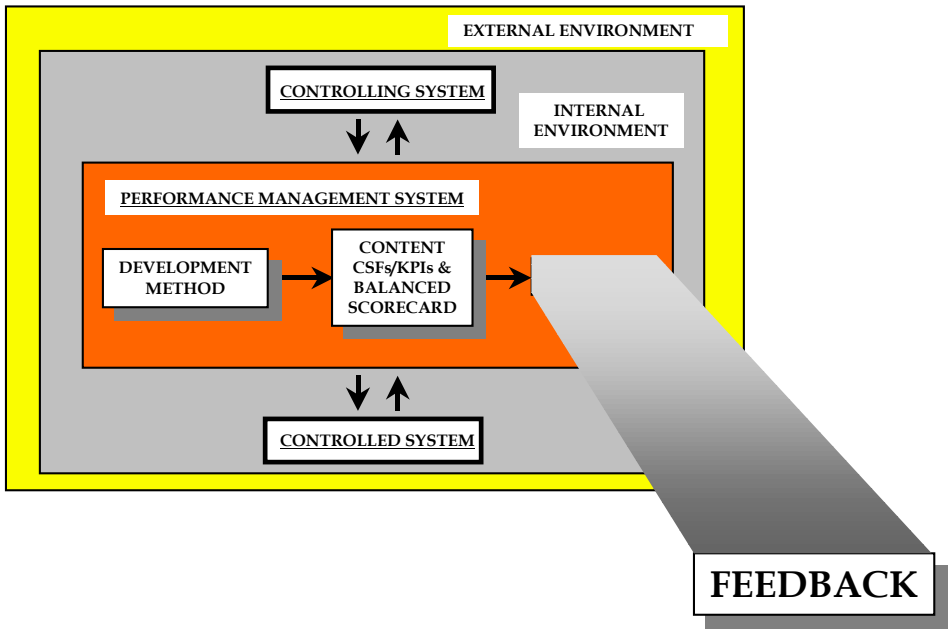


Exhibit 3.7: Behavioral factors for Performance management system – Feedback

Performance Management System – Feedback: Feed forward

Many performance management systems give only the actuals to date, with only limited attention being paid to future expectations by including prognoses in the reports. Too often, management assumes that good results in the past are a guarantee for good results in the future, but they are not. In today's turbulent, dynamic, and quickly changing business environment, future expectations are sorely needed (Walther et al., 1997; Ashton, 1997; Ten Have

et al., 1998; Martins, 2000). If managers make prognoses for their responsibility areas, they are not only better prepared on what is to come but they can also undertake preventative action, if necessary (Rigas and Fan, 2000). These prognoses have to be of a good quality, so that managers have good insight into their areas and future performances. This will increase trust not only in the defined KPIs but also in their own management abilities.
The requirements described above are in this research combined into the behavioral factors: *Managers are involved in forecasting* and *Managers trust good-quality forecasts.*

The performance management system has to support managers actively in the execution of their activities (Wijn et al., 1995; Van Looij, 1996). Consequently, the performance management system must provide managers with the information that makes it possible for them to undertake corrective and preventative action (McMann and Nanni, 1994). After all, as Johnston and Fitzgerald (2000) remark, "measurement is not a substitute for action and improvement: measurement is a facilitator, not the raison d'être." Kaplan (1998) and Samson and Challis (1999) suggest that the key to success lies in the willingness of the organization to start using and acting on the information provided by the performance management system. The performance management system is action oriented if it not only contains information for taking action but also enables managers to follow the execution of these actions and their results. If this is possible, managers will be greatly motivated because the performance management system helps them to solve issues, prevent problems, and obtain higher performance.
The requirements described above are in this research combined into the behavioral factor: *Managers' activities are supported by KPIs.*

Managers need to compare their results with managers of other organizational units or even of other organizations. This means that KPIs have to be comparable throughout the organization: they must have the same meaning, the same definition, and the same method of calculation (Tuijl et al., 1995; Van Looij, 1996; Moon and Fitzgerald, 1996). KPIs should also fit the frame of reference of managers, so managers can understand the comparisons between their performance and those of others. Making KPIs comparable has as an added advantage in that the organization can put its performance in perspective by benchmarking it against that of other organizations (Martins, 2000). This helps managers to learn whether their performance is on par or whether it should be improved. Comparing KPIs is, however, not so straightforward (Wiersma, 1998). The moment of measuring and comparing KPIs is important. New systems are often implemented when things are not going so well for the organization. The chance of performance improvement anyway is therefore quite good. However, this will distort the result (in a positive way) of the KPI, making it less comparable. For many nonfinancial indicators, there will be a time lag before improvements show up. This has to be taken into account when considering the timing of making the comparison.
The requirements described above are in this research combined into the behavioral factor: *Managers' frames of reference contain similar KPIs.*

Performance Management System – Feedback: Feedback

Management information is intelligible for users if the performance management system is easy to understand (Von Cotta-Schønberg, 1995). The use of colors, graphs, tables, standard formats, and standard interfaces make the performance management system accessible (Tuijl et al., 1995). Hacker and Brotherton (1998) even go so far as to say that, despite the fact that standardization is often resisted, leaders should be very clear and forceful in their expectations about standardized reporting and presentation. The principle should be that "one pic-

ture says more than a thousand words" (Kerklaan et al., 1994). Text supporting graphs should be short and concise. A good method to make an intelligible performance management system is to let the managers participate in the design of the system. This will give managers a greater insight into the structure and setup of the performance management system and will also make sure it is better tailored to their needs. This increases the acceptance of the performance management system. The requirements described above are in this research combined into the behavioral factors: *Managers are involved in making the CSF/KPI/BSC reporting layout* and *Managers understand the CSF/KPI/BSC reporting*.

Reliable information consists of data that has been measured systematically and objectively without distortion, interference, or manipulation of managers and that can be verified by independent sources (Likierman, 1993; Tuijl et al., 1995; American Productivity & Quality Center, 1999b; Eagleson and Waldersee, 2000). There is a lot of literature about the positive relationship between reliability of feedback and acceptance of feedback (Locke and Latham, 1990; Latham and Marchbank, 1994; Alkemade et al., 1994). If the receiver of the feedback considers this feedback to be reliable (i.e., an accurate depiction of his performance), then he or she will accept that feedback. This means that the receiver will base his or her decisions and course of action on this feedback, which in turn will lead to better performance. The requirements described above are in this research combined into the behavioral factor: *Managers trust the performance information*.

During information analysis, managers look at the deviation between targets (budgeted values) and actuals (realized values). Of interest are magnitude, cause, type, and tendency of the deviation (Bossert, 1996; Martins, 2000). Type means whether the deviation is incidental (question is then: For how long?) or structural (question is then: What are the future consequences?). The degree to which analyses are made by managers indicates how much the performance management system is used by these managers. The fact that managers make their own analyses will raise the quality of the analyses because these managers know best what is happening in their responsibility areas and are, therefore, in the best position to formulate corrective actions. It will also raise acceptance of the analyses because these are not forced on managers by a relative outsider (Algera, 1990; Economist Intelligence Unit, 1994). A precondition is that the performance management system makes information openly available, so that the manager can trust good-quality analyses with enough depth. The requirements described above are in this research combined into the behavioral factors: *Managers are involved in making analyses* and *Managers trust good-quality analyses.*

3.2.4 Controlled System

The controlled system uses the performance management system to obtain information about the responsibility area, for self-control and self-management and for accountability to the controlling system (Exhibit 3.8). Each *management level* has its own specific CSF/KPI set and specific BSC. Because there are several management levels in one organization, there will be several sets of indicators and scorecards. There is a specific *management style* that a manager has to apply if he or she uses the performance management system in the communication upward to superior and downward to employees.

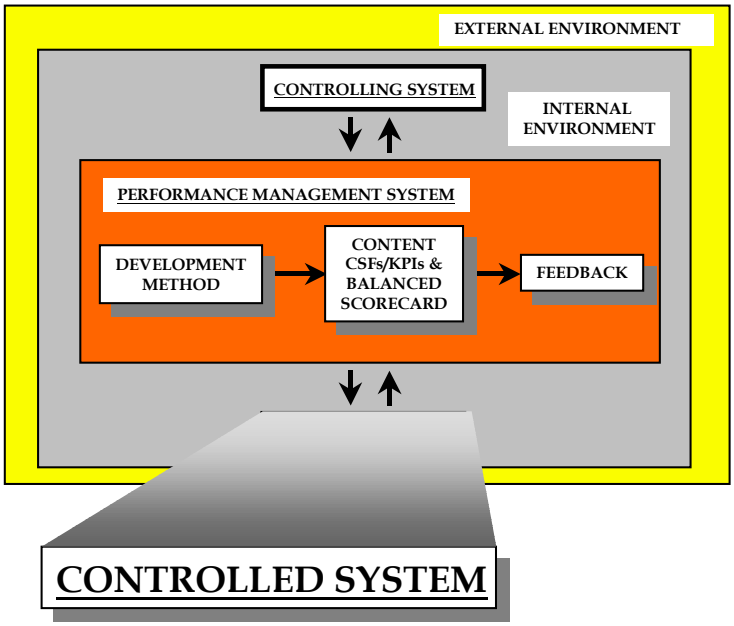


Exhibit 3.8: Behavioral factors for Controlled system

Controlled system: Management level

Because different management levels have different responsibilities, there must be more than one set of CSFs, KPIs, and BSCs in the organization, each representing these different responsibilities. Managers use those indicators that give them the best information for their decision-making process (McKinnon and Burns, 1992). In this way, every management level receives the information that is relevant to that level (Ghobadian and Ashworth, 1994; Brancato, 1995; Lewy, 1997). Often, the set for top management will consist of mainly financial and long-term indicators. The lower in the organization the level, the more operational and short-term the indicator set will become (Groot, 1997; McMann an Nanni, 1998; Massello, 1999). If the CSF/KPI sets are not specific enough, the performance management system is not able to support managers in making their decisions and in obtaining their specific goals because the provided information is not relevant and specific enough. This will lower the acceptance of the performance management system. The requirements described above are in this research combined into the behavioral factor: *Managers use the CSFs/KPIs/BSC that match their responsibility areas.*

A manager can become overloaded with information. Meyer (1999) complains: "Many corporate scorecards, even BSCs, contain 50 or 60 measures, a number far too large because neither relationships among measures nor the impact of measures on business results can be grasped by most people." Many things can be measured but then the manager has to spend too much time measuring and trying to shift to the obtained data to get to the real valuable information. As Nobel-prize winning economist Herbert Simon put it: "a wealth of information creates a poverty of attention".[2] This overload fragments the manager's attention and effort (Daven-

[2] As quoted in: Shapiro, C. and H.R. Varian (1999), *Information rules, a strategic guide to the network economy*, Harvard Business School Press, Boston.

port, 2000). To prevent the problem, managers need to receive that amount of information that is needed to represent fairly their responsibility areas. This means, in general, limiting the CSF/KPI set to the critical indicators (Likierman, 1993; Brancato, 1995; Merchant, 1998), Massello (1999) and Hronec (1993) propose 5 to a maximum of 15 indicators per organizational unit. The best way to limit the KPIs is to let managers choose their own because they know best which indicators accurately monitor their activities. After choosing the set, managers should be able to spend enough time on working with these indicators. Because the set is limited, managers will not spend too much time. However, if they do not get enough time due to other work pressures or too many special tasks, they will not get enough added value out of their KPIs. The requirements described above are in this research combined into the behavioral factors: *Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs* and *Managers have enough time to work with their CSFs/KPIs/BSC.*

Controlled system: Management style

In the literature, various management styles are distinguished like management by numbers, management by walking around, management by objectives and participative management style. This research studies the style a manager uses when applying the performance management system in managing subordinates, managing himself, and communicating with superiors.

Marchand et al. (2000) state that what differentiates today's high-performing companies are the capabilities and behaviors associated with effective information use. They call this the information orientation of the company and its leaders. A positive information orientation or attitude toward the performance management system and performance management entails that managers recognize the value of the new system for supporting their activities like managing employees, and in obtaining targets. This fosters the acceptance of the new system (Kampfraath and Mast, 1992; Platform Beleidsanalyse, 1995). Managers who have previously had positive experiences with CSFs, KPIs, and the BSC often have a positive attitude toward performance management. A positive attitude may be affected negatively if the new system, which makes performance very transparent, is going to be used to punish bad results (Looij, 1996; Vosselman, 1999b). Managers will then start to resist the performance management system and will manipulate the information in the system (Meekings, 1995). The requirements described above are in this research combined into the behavioral factors: *Managers have earlier (positive) experiences with performance management, Managers realize the importance of CSFs/KPIs/BSC to their performance, Managers can use their CSFs/KPIs/BSC for managing their employees,* and *Managers do not experience CSFs/KPIs/BSC as threatening.*

3.2.5 Controlling System

The controlling system is the superior of a manager (Exhibit 3.9). Managers use the information from the performance management system for accountability purposes and in this way can report and explain performance to their superior (De Leeuw, 1990). The way this happens is governed by the planning and control cycle that is present in the organization. This cycle stipulates the relationship with the controlled system (the communication that has to take place between manager and superior), using the specific indicators for which a manager is responsible. The controlling system must appoint a specific person to sponsor and *supervise* the development, implementation, and use of the performance management system.

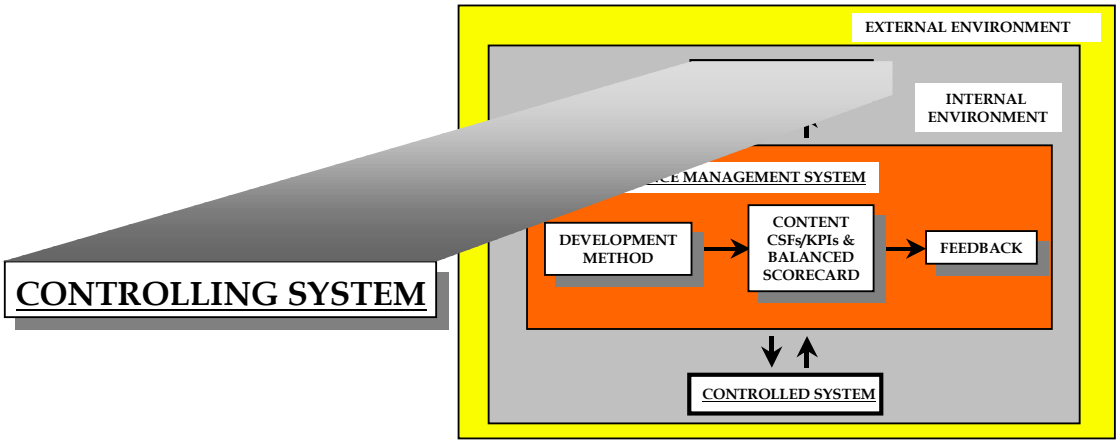


Exhibit 3.9: Behavioral factors for Controlling system

Controlling system: Responsibility

For each KPI, a single manager should be appointed who is formally responsible for the results of that indicator (Bonnet and Krens, 1994; McMann and Nanni, 1994). This makes responsibility obvious when an issue arises around a particular indicator (Kerklaan et al., 1994). If accountabilities for KPIs are not clear, the indicators can be viewed as being for information only (Ashton, 1997). As a consequence, either the indicator will not be managed, resulting in late action and bad performance, or many discussions will take place between managers. If results are bad, managers may put the blame on each other; if results are good, managers may undeservedly claim the glory. Samson and Challis (1999) go so far as to say: "A critical breakthrough for many firms is the issue of who owns the measures and who owns the data. In this regard, by far the best results have come when the measures have been properly structured and set up to reflect actual performance goals of the organization, but done so in such a way to foster ownership of the data and the measures by the employees who conduct the actions that affect these measures. These employees become empowered and take ownership over these measures." To prevent disagreements on a later date, managers should be involved when appointing indicators to people. Involvement will also raise the acceptance level of the accountability. The requirements described above are in this research combined into the behavioral factors: *Managers have sole responsibility for a KPI* and *Managers can influence the KPIs assigned to them.*

Controlling system: Supervision

During the development and implementation of the performance management system, a sponsor from top management should be appointed who has to supervise the project and who is responsible for a successful implementation (Geanuracos and Meiklejohn, 1994; Van Harten, 1996). This person has to be acceptable to the organization based on experience, seniority, or other criteria. If the sponsor is not accepted by the organization, the individual will not be able to influence the project activities enough to make sure the project can be finalized successfully. If the sponsor has been accepted, the sponsor must make sure to spend enough time on the project (De Waal and Bulthuis, 1996). Then, the organization will see the

promoter takes the project seriously. Because the implementation of a performance management system takes a lot of the organization's effort. Active and visible support of the project by top management is essential to convey the importance of the new system to the organization. Top management (the controlling system) has to use the performance management system frequently and visibly in dealings with the controlled systems (Massello, 1999) and must regularly communicate the results from the performance management system to the organization (Economist Intelligence Unit, 1994). For instance, this can be done by regularly scheduling meetings to discuss the performance management system results (Hacker and Brotherton, 1998). The requirements described above are in this research combined into the behavioral factors: *Managers accept the promoter, Managers see the promoter spends enough time on the performance management system implementation*, and *Managers clearly see the promoter using the performance management system.*

Controlling system: Relationship with controlled system

In the relationship between controlling system and controlled system, there has to be a certain degree of trust in order to be able to use the performance management system effectively (Platform Beleidsanalyse, 1995; Ashton, 1997; Algera, 2000). This is because the performance management system makes the performance of the controlled system much more transparent than the traditional financial-based reporting system did. This makes the controlled system more vulnerable to criticism from the controlling system. If the controlling system then uses the information to punish or sanction the controlled system, the latter will not trust that the former makes appropriate use of the system (Fortuin, 1994). Managers will start to resent the performance management system and will sabotage it. The requirements described above are in this research combined into the behavioral factor: *Managers and their controlling systems have a mutual trust.*

3.2.6 Internal Environment

The internal environment constitutes the inside world or the context in which the performance management system, the controlled system and the controlling system, exist and operate (Exhibit 3.10). Since development and adjustment of the strategy, the business processes, and the planning and control cycle take place continuously, an organization has to make sure there is *alignment* between strategy, processes, and the performance management system. This means that the performance management system, CSFs, KPIs, and BSC need to be updated regularly to reflect the new situation of the organization. Effective use of the performance management system requires a change in *organizational culture*: from a focus on punishment to a focus on improvement (Hofstede, 1984, Kaplan and Norton, 2000). This must be reflected in the reward structure and communication processes of the organization.

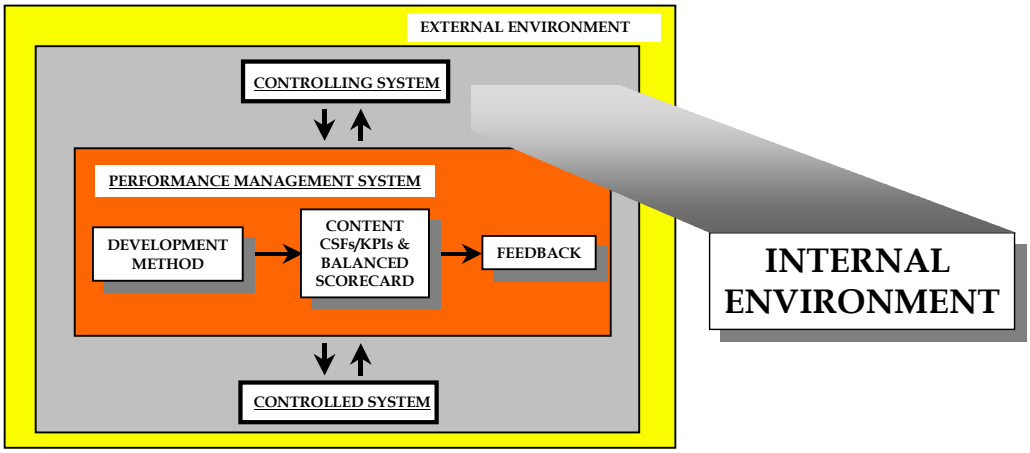


Exhibit 3.10: Behavioral factors for Internal environment

Internal environment: Alignment

Rapid changes in the market (competitors' actions, recessions) and inside the organization (reorganization, personnel turnover) force the organization to constantly adapt its strategy and business processes. This, in turn, causes adaptation of the performance management system, CSFs, KPIs, and the BSC, which are all monitoring the strategy and processes. Consequently, an organization has to review and update its performance management system regularly to make sure it still accurately represents the organization's performance (Torremans, 1993; Williams, 1998; Olve et al., 1999; Pfeffer and Sutton, 2000). According to the American Productivity & Quality Center (1999a), best-practice organizations recognize the need to monitor continuously and improve the performance management process. This review and adaptation of the performance management system can take place during the annual planning process, making it an integral part of the organization's planning and control cycle (Ghobadian and Ashworth, 1994; Du Mée, 1996a; American Productivity & Quality Center, 1999b). During the update, there needs to be consensus among managers about the changes to be made in the performance management system so these changes will be accepted by them. If review and adaptation do not take place, the quality of the information from the performance management system will decrease, thereby losing its relevance to the managers, who will be inclined to use the system less and less. The requirements described above are in this research combined into the behavioral factors: *Managers find the performance management system relevant due to regular evaluations*, *Managers use the performance management system regularly during the planning and control cycle*, and *Managers agree on changes in the CSF/KPI set*.

Internal environment: Organizational culture

Regular and frequent use of the performance management system requires alignment between the culture of the organization and the culture that is needed to practice performance management. This culture needs to be based on performance improvement, self-control, and learning – not on punishment (Torremans, 1993; Geanuracos and Meiklejohn, 1994; Tuijl et al., 1995; McMann and Nanni, 1994; Eagleson and Waldersee, 2000). This improvement culture, in which mistakes are seen as sources for improvement and not as causes for punishment, is

characterized by Hofstede (1984) as a culture in which there is a small distance between controlling system and controlled system, collectivism, absence of masculine role patterns, long-term orientation, and a great degree of tolerance for ambiguity. This culture stimulates managers to use the results on their KPIs as the starting point for improvement actions. If an organization uses the performance management system solely for accountability and punishment purposes, there will be a great incentive for managers to start manipulating the figures and optimizing the KPI results without necessarily solving underlying problems. The requirements described above are in this research combined into the behavioral factor: *Managers are stimulated to improve their performance.*

In an organization, there can exist a (relatively) tranquil and stable or a turbulent working environment. In case of the latter, managers are confronted with many conflicts, overtime, unfinished business, and stress. As Ovle et al. (1999) put it: "The rapid succession of change projects has exasperated many employees. Seeing the BSC as yet another three-letter acronym, they can easily perceive it as just one more flavor of the month, just another burdensome project." However, in a stable environment, these kind of situations occur considerably less frequently. The working environment can impact the implementation of a performance management system dramatically (Platform Beleidsanalyse, 1995; Kaplan and Norton, 2000). In a turbulent situation, managers will not have enough time, attention span, or energy to spend on the implementation of and learning the performance management system (De Waal and Bulthuis, 1996). The requirements described above are in this research combined into the behavioral factor: *Managers work in a stable, relatively tranquil environment.*

An open communication structure is important to convey the reasons for the performance management system and the status of the performance management system implementation (De Waal and Bulthuis, 1996; Choo, 2000). The results of the CSFs, KPIs, and BSC must be freely available to everybody in the organization (Fortuin, 1994; Kloot, 1997; Schiemann and Lingle, 1999). In this way, people in the organization are informed about their own results and the result of the overall organization. This will increase trust in each other and in the system. An added benefit is that openness makes comparisons between organizational units easier (benchmarking). If there is inadequate openness, distrust and fear for the performance management system will start to appear, especially if people think the system will be used for punishment. The requirements described above are in this research combined into the behavioral factor: *Managers' results on CSFs/KPIs/BSC are openly communicated.*

As Chenhall (1997) states, there is a strong body of opinion in both psychology and accounting, which suggests that performance measures are likely to have a stronger impact on individuals' reactions and on their subsequent behavior if the indicators are used to evaluate the individuals' performance. Thus, it seems likely that members of organizations will be encouraged to react more responsively to feedback from performance measures if they are evaluated on the measures. For this reason, the implementation of a performance management system has to be supported by the reward structure of the organization (Geanuracos and Meiklejohn, 1994; Kloot, 1997). It is important, as Kerr (1995) points out, that the reward structure positively reinforces desired behavior. Consequently, the performance management system and the reward structure must be aligned, so managers are adequately rewarded for the desired results on their KPIs (Zairi, 1996; Kaplan and Norton, 1996a; Economist Intelligence Unit and Arthur Andersen, 1998). Rewards function as incentive for managers to use the performance management system. The requirements described above are in this research combined into the behavioral factor: *Managers' use of the performance management system is stimulated by the reward structure.*

3.2.7 External Environment

The external environment comprises the outside world or the context in which the organization (the internal environment) exists and operates (Exhibit 3.11). The performance management system must be able to monitor significant developments in the industry and the macroenvironment in which the organization operates.

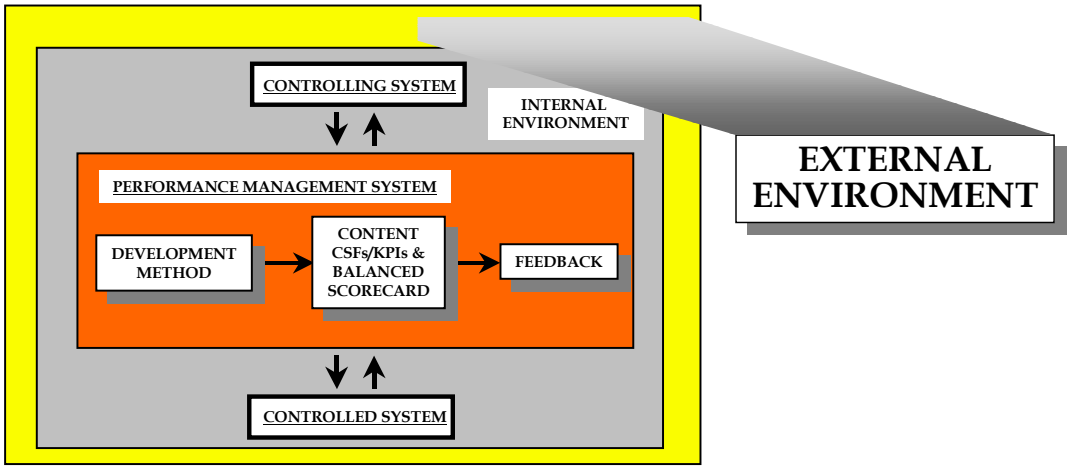


Exhibit 3.11: Behavioral factors for External environment

Organizations have to deal with several external stakeholders, like banks, stockholders, supervisory board, and unions. All these parties request information from the organization for their own purposes (Von Cotta-Schønberg, 1995). Consequently, they would like to influence the content of the organization's performance management system. The organization has to provide this information to a certain degree (Eagleson and Waldersee, 2000). By incorporating crucial stakeholders' information needs in the performance management system, the organization becomes more responsive to the outside world and competitors. This advantage must be weighted against the risk of tailoring the performance management system too much to the requirements of the outside world so that the information of the performance management system does not adequately cover the responsibility areas of the managers anymore (Van Looij, 1996; Schneiderman, 1999; Pfeffer and Sutton, 2000). The requirements described above are in this research combined into the behavioral factor: *Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.*

The requirements that the law puts on external reporting can severely influence content and structure of periodic reporting (Smits, 1994; Snellenberg, 1995). Incorporating crucial external reporting requirements in the performance management system makes the organization more responsive to the outside world. However, these outside information demands can be so strong that internal reporting loses its relevance for managers. The figures and calculations can be set up in a way to satisfy external demands, but in this way they can lose the meaning for internal control purposes. If this happens, there is a chance the information of the performance management system does not adequately cover the responsibility areas of managers anymore, decreasing their faith in the performance management system. Research, performed

by Scapens (1995), shows that external reporting requirements has an indirect influence on reporting by management teams. Consequences of certain organizational decisions, that could show up unfavorably in external reporting, were managed in such a way by managers that the internal reporting was changed so that favorable external reporting could be derived from it. This made the internal reports less (directly) relevant for managers. The requirements described above are in this research combined into the behavioral factor: *Managers find the performance management system relevant because it has a clear internal control purpose.*

3.2.8 Overview of Behavioral Factors

Exhibit 3.12 contains the selected behavioral factors, per subpart of the classification scheme. For each behavioral factor, a clarification question is given to illuminate the meaning of the factor.

Classification Scheme Part	Subpart	Behavioral Factor	Clarification Question
Performance management system – Development method	Development method	Managers accept the need for performance management.	Has the need for performance measurement been demonstrated?
		Managers have an active role during the development stage of the performance management system project.	Are users sufficiently involved during development stage?
		Managers agree on the starting time.	Has the appropriate starting time for performance management system project been chosen?
		Managers have been involved in decision making about the project starting time.	
		Managers are informed about the status of the performance management system project.	Does regular communication take place during the project?
		Managers are actively communicating about the performance management system project.	
Performance management system – Content	Quality	Managers understand the meaning of KPIs.	Have KPIs been clearly defined?
		Managers are involved in defining KPIs.	
		Managers have insight into the relationship between KPIs and financial results.	Is the relationship between KPIs and financial results sufficiently clear?

Classification Scheme Part	Subpart	Behavioral Factor	Clarification Question
	Registration	Managers do not get discouraged by the collection of performance data.	Is performance data collected with information systems?
	Purpose	Managers have insight into the relationship between strategy and CSFs/KPIs.	Is the relationship between strategy and CSFs/KPIs sufficiently clear?
		Managers have insight into the relationship between business processes and CSFs/KPIs.	Is the relationship between business processes and CSFs/KPIs sufficiently clear?
	Targets	Managers are involved in setting KPI targets.	Are users sufficiently involved during target setting?
	Balance	Managers' KPI sets are aligned with their responsibility areas.	Has a balanced set of KPIs been made?
		Managers have insight into the relationship between cause and effect.	
Performance management system – Feedback	Feed forward	Managers are involved in forecasting.	Is the performance management system sufficiently future oriented?
		Managers trust good-quality forecasts.	
		Managers' activities are supported by KPIs.	Is the performance management system enough action oriented?
		Managers' frames of reference contain similar KPIs.	Are KPIs mutually comparable?
	Feedback	Managers are involved in making the CSF/KPI/BSC reporting layout.	Is the performance management system sufficiently intelligible?
		Managers understand the CSF/KPI/BSC reporting.	
		Managers trust the performance information.	Is the information in the performance management system reliable?
		Managers are involved in making analyses.	Has the information been sufficiently analyzed?
		Managers trust good-quality analyses.	
Controlled system	Management level	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	Have specific sets of CSFs and KPIs been made for each management level?
		Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	Is the number of KPIs per manager limited?

Classification Scheme Part	Subpart	Behavioral Factor	Clarification Question
		Managers have enough time to work with their CSFs/KPIs/BSC.	
	Management style	Managers have earlier (positive) experiences with performance management.	Have managers' attitudes toward performance management been checked?
		Managers realize the importance of CSFs/KPIs/BSC to their performance.	
		Managers do not experience CSFs/KPIs/BSC as threatening.	
		Managers can use their CSFs/KPIs/BSC for managing their employees.	
Controlling system	Responsibility	Managers can influence the KPIs assigned to them.	Have managers been made responsible for specific KPIs?
		Managers have sole responsibility for a KPI.	
	Supervision	Managers accept the promoter.	Has a promoter been appointed for the project?
		Managers see the promoter spends enough time on the performance management system implementation.	
		Managers clearly see the promoter using the performance management system.	
	Relationship with controlled system	Managers and their controlling systems have a mutual trust.	Does the relationship between controlled and controlling systems have a positive influence on their working together?
Internal environment	Alignment	Managers find the performance management system relevant due to regular evaluations.	Is the performance management system an integral part of the planning and control cycle?
		Managers use the performance management system regularly during the planning and control cycle.	
		Managers agree on changes in the CSF/KPI set.	
	Organizational culture	Managers are stimulated to improve their performance.	Has a culture of improvement been established?
		Managers work in a stable, relatively tranquil environment.	Has the work situation in the organization been improved?

Classification Scheme Part	Subpart	Behavioral Factor	Clarification Question
		Managers' results on CSFs/KPIs/BSC are openly communicated.	Has an open communication structure been established?
		Managers' use of the performance management system is stimulated by the reward structure.	Has the reward structure been aligned with the performance management system?
External environment	External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	Has the influence of external stakeholders been limited?
		Managers find the performance management system relevant because it has a clear internal control purpose.	Has the influence of external reporting requirements been limited?

Exhibit 3.12: Listing of the selected behavioral factors, per classification scheme part and subpart

3.3 OPERATIONALIZING THE BEHAVIORAL FACTORS

In order to answer the research question which seeks to identify which of the behavioral factors (listed in Exhibit 3.12) contribute to successful implementation and use of a performance management system, the identified factors have to be operationalized. This was realized by converting the factors into questions.

The behavioral factors and corresponding questions can be grouped in three stages according to Kerklaan et al. (1994): (1) the information plan stage, in which the decision to implement a performance management system is taken and a suitable development method is chosen; (2) the measure plan stage, in which the CSFs, KPIs, and BSC are developed; and (3) the action plan stage, in which the performance management system is put into use. These stages more or less match the three parts of the performance management system as described in the classification scheme (Exhibit 3.3): development method, content, and feedback. Kaplan and Norton (1996a)[3] distinguish four stages for developing a performance measurement system: (1) define the measurement architecture (including the choice of the unit where to implement the BSC); (2) build consensus around strategic objectives; (3) select and design measures; and (4) build the implementation plan (including implementing the BSC). If the first two stages of Kaplan and Norton are taken together and their combination is seen as the starting stage, one again arrives at three stages. They are referred to as: the starting stage (S), in which the decision to implement a performance management system is taken; the development stage (D), in which the performance management system is developed; and the use stage (U), in which the performance management system is implemented and put into use. The behavioral factors, operational questions, and stages are given in Exhibit 3.13.

[3] See the appendix in: Kaplan, R. S. and D.P. Norton (1996), *The balanced scorecard, translating strategy into action*, Harvard Business School Press, Boston.

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
Performance management system – Development method	Managers accept the need for performance management.	– What were, according to you, the reasons for implementing a performance management system? – Do you think that the use of the performance management system is important for the continuity of the organization? If yes, why? If no, why not?	S1
	Managers have an active role during the development stage of the performance management system project.	– How would you describe your role during the implementation of the performance management system: active or reviewing? – Were you sufficiently involved during the development of the performance management system, CSFs and KPIs?	D1
	Managers agree on the starting time.	– Was, according to you, the right starting time chosen for the implementation? If yes, why? If no, why not?	S2
	Managers have been involved in decision making about the project starting time.	– Were you involved in the decision making about the project starting time? If yes, how?	S3
	Managers are informed about the status of the performance management system project.	– How often were you informed, during the project, about the status of the project? Did you value this communication? Why? – Which communication tools were used?	D2
	Managers are actively communicating about the performance management system project.	– How often did you contribute to the communication about the project? – Was, during the communication, feedback asked for? – Was there any follow-up on given feedback?	D3
Performance management system – Content	Managers understand the meaning of KPIs.	– Are you familiar with the definitions of the KPIs? How are these available? – How often (per month/year) are these definitions changed?	D4
	Managers are involved in defining KPIs.	– Were you (actively) involved in the defining of the KPIs?	D5
	Managers have insight into the relationship between KPIs and financial results.	– Do you discern a relationship between the results on KPIs and actions taken and the organization's financial results? – If yes, is this relationship quantified, and how is this done? – If no, why not? – Are financial consequences of KPI results mentioned in the performance management system?	U1

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
	Managers do not get discouraged by the collection of performance data.	– Is the time you and your subordinates spend on collecting data for KPI reporting acceptable? – How much of the total data is manually provided?	U2
	Managers have insight into the relationship between strategy and CSFs/KPIs.	– Does the current CSF/KPI set measure the strategic goals of the organization adequately? If yes, which goals are being measured? If no, why not?	D6
	Managers have insight into the relationship between business processes and CSFs/KPIs.	– Is there an unambiguous relationship between the CSF/KPI set and the crucial business activities of the organization? If yes, which crucial activities are being measured? If no, why not?	D7
	Managers are involved in setting KPI targets.	– Were you sufficiently involved during the setting of targets for the KPIs? – To which degree are KPI targets mentioned in the performance management system?	D8
	Managers' KPI sets are aligned with their responsibility areas.	– Is the current CSF/KPI set an adequate reflection of your responsibility area?	D9
	Managers have insight into the relationship between cause and effect.	– Are there, in your opinion, clear cause–and–effect relationships identified for the KPIs? If yes, how many relationships? If no, why not?	U3
Performance management system – Feedback	Managers are involved in forecasting.	– Are you sufficiently involved in forecasting? How are you involved? – How often (per year) are forecasts made?	U4
	Managers trust good-quality forecasts.	– Has, in your opinion, the quality of the forecasts been improved, compared to the actuals?	U5
	Managers' activities are supported by KPIs.	– To which degree do you undertake actions, based on the KPI results? Can you give an example of an action? If you do not take action based on the KPI results, why not? – Are these actions better focused and more effective than in the past?	U6
	Managers' frames of reference contain similar KPIs.	– Do you use the CSF/KPI set for comparing your performance with those of other units or organizations? If yes, what are the benefits? If no, why not? – Is comparison of results/benchmarking viewed as threatening in your unit? If yes, why?	U7

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
	Managers are involved in making the CSF/KPI/BSC reporting layout.	– Were you sufficiently involved in the reporting layout and content definition?	D10
	Managers understand the CSF/KPI/BSC reporting.	– Are colors, tables, graphs and standard formats used in the performance management system? – How intelligible do you find the performance management system (including volume of reports)?	D11
	Managers trust the performance information.	– How reliable is the performance management system information, in your opinion? – How often do you have discussions about the reliability of the performance management system?	U8
	Managers are involved in making analyses.	– Do you regularly make analyses of the KPI results? How? – Are you sufficiently involved in analysis making?	U9
	Managers trust good-quality analyses.	– How open are you in your analyses? How serious are your conversations about your analyses? – How is in general, in your opinion, the quality of analyses in the organization?	U10
Controlled system	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	– Is the CSF/KPI set a good representation of all the important issues on your management level? – Is there a separate, specific CSF/KPI set for each management level?	D12
	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	– Were you sufficiently involved in the priority setting of the KPIs?	U11
	Managers have enough time to work with their CSFs/KPIs/BSC.	– How much time do you spend on working with the performance management system? Is this enough?	U12
	Managers have earlier (positive) experiences with performance management.	– Did you have prior experience with performance management? Was this a positive or a negative experience? – Did this experience affect your attitude toward this project?	S4
	Managers realize the importance of CSFs/KPIs/BSC to their performance.	– Do you find the use of the performance management system, CSFs and KPIs useful for your role as manager? If yes, why? If no, why not?	U13

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
	Managers do not experience CSFs/KPIs/ BSC as threatening.	– Are the CSFs/KPIs/BSC threatening to you? Why?	U14
	Managers can use their CSFs/KPIs/BSC for managing their employees.	– Are there advantages and disadvantages in using performance management when managing subordinates and communicating with superiors? If yes, which? If no, why not?	U15
Controlling system	Managers can influence the KPIs assigned to them.	– Do you accept responsibility for the CSFs and KPIs appointed to you? – Are you tackled on your performance? – Do you tackle your subordinates on their performance?	D13
	Managers have sole responsibility for a KPI.	– Are responsible persons appointed for each KPI? – Is per KPI only one person responsible? – Are there KPIs for which there is more than one person responsible? If yes, how are conflicts about these KPIs resolved?	U16
	Managers accept the promoter.	– Who was the initiator of the performance management system development project? – Who was the promoter of the performance management system development project? – What was the management level of the promoter? – How do you judge the role of the promoter during the project?	D14
	Managers see the promoter spends enough time on the performance management system implementation.	– How much time (in hours and as a percentage of his time) did the promoter spend on the project?	D15
	Managers clearly see the promoter using the performance management system.	– Does the management team work with the performance management system? – How visible is this in the organization?	U17
	Managers and their controlling systems have a mutual trust.	– How do you manage your subordinates: with tight or loose control? – How are you managed by your superior: centralized or decentralized? – Is there trust between you and your subordinates/superior? – How long have you worked with your subordinates/superior? – Has this made the implementation of performance management easier?	U18

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
Internal environment	Managers find the performance management system relevant due to regular evaluations.	– How many times per year is the CSF/KPI set reviewed and evaluated?	U19
	Managers use the performance manage-ment system regularly during the planning and control cycle.	– Are CSFs, KPIs , and the BSC part of the yearly planning cycle?	U20
	Managers agree on changes in the CSF/KPI set.	– How many changes are made each time to the CSF/KPI set? – Who decides about these changes? – Have you made suggestions for changes in the CSF/KPI set and have these suggestions been implemented?	U21
	Managers are stimulated to improve their performance.	– How do you characterize the culture of your organization: focused on improvement or on punishment? How does this show?	U22
	Managers work in a stable, relatively tranquil environment.	– Can you, in the light of all your activities, spend enough time on working with the performance management system and your specific KPIs? – Do conflicts take place about KPI results? – How do you characterize the working environment in your organization: stable or turbulent?	S5
	Managers' results on CSFs/KPIs/BSC are openly communicated.	– Are the results of all the KPIs reported to all the managers, or does distribution take place per responsibility area? – Do performance comparisons take place between managers (ranking)?	U23
	Managers' use of the performance management system is stimulated by the reward structure.	– Are KPI results linked to your reward? If yes, are you happy with this link? If no, why not? – Is the reward strictly financial, or also nonfinancial? What type of nonfinancial rewards are used?	U24
External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	– Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? – How often do conflicts take place with the stakeholders about this set?	D16

Classification Scheme Part	Behavioral Factor	Questions	Influence on Stage
	Managers find the performance management system relevant because it has a clear internal control purpose.	– Is the CSF/KPI set used for external reporting? – Is a separate external reporting set of internal reports being used? – What, in your opinion, was the focus during the development of the CSFs and KPIs: external or internal?	D17

Exhibit 3.13: Behavioral factors – operationalized in interview questions

The questions were distributed over the three sources of information collection that were going to be used during the case study research: a questionnaire, an interview list, and a document research question list. In Appendix C, a description of these sources and an overview of the distribution of the operational questions over the sources is given. It was guaranteed that questions that could be checked by means of more than one information source indeed appeared more than once.

Many authors claim that, in order for an implementation of a performance management system to be successful, a good and proven development method needs to be applied (Kerklaan et al., 1994; Kaplan and Norton, 1996a). Some authors also claim that the time of starting the performance management system implementation has to be chosen carefully to ensure that there is sufficient time to develop the system (Van Helden and Lewy, 1998). Martins (2000), after a broad literature review, grouped the main performance management system characteristics he found in a table, according to a qualitative and rough evaluation of probable contribution of the characteristics to the design and development (similar to the S and D stages in Exhibit 3.13) and use (similar to the U stage in Exhibit 3.13) stages of a performance management system (Exhibit 3.14).

Martins concludes that the design and development stage has a better chance than the use stage of including certain characteristics into a performance management system. This gives us the basis for the second research question for phase II:

> *Are behavioral factors from the starting and development stages more important to the successful implementation and use of a performance management system than those of the use stage?*

Characteristic of Performance Management System	Probable Contribution to:	
	Design & Development	Use of Data
Congruent with competitive strategy	High	Low
Composed of financial and nonfinancial performance measures	High	Low
Provide direction and support to continuous improvement activities	High	High
Provide support to identify tendencies and progress in performance	Low	High
Facilitate understanding of cause–and–effect relationships regarding performance	High	High
Intelligible to majority of employees	Medium	High
Cover all company's business processes	High	Low
Real time in formation about performance	High	High
Dynamic	High	Medium
Induce employees' attitudes	Medium	High
Evaluate group performance instead of individual performance	Medium	High
Allow performance to be compared against competitive benchmarks	High	High
Composed by efficiency and effectiveness performance measures	High	Low
Linked to business processes	High	Low
Be part of individual and organizational learning	Low	High
Composed of integrated process and result performance measures	High	Low
Integrated to management systems	High	High
Provide a perspective of past, present, and future performance	Medium	High

Exhibit 3.14: Probable contribution of certain performance management system characteristics to the design & development and use of data stages

4 Phase I – Case Studies

Chapter 3 provided a description of the behavioral factors and criteria for regular use that were derived from the literature and operationalized in questions. This chapter describes how the importance of these behavioral factors for the implementation and use of a performance management system is tested by means of case study research. The results of the case studies are analyzed and used to answer the research questions (Exhibit 4.1).

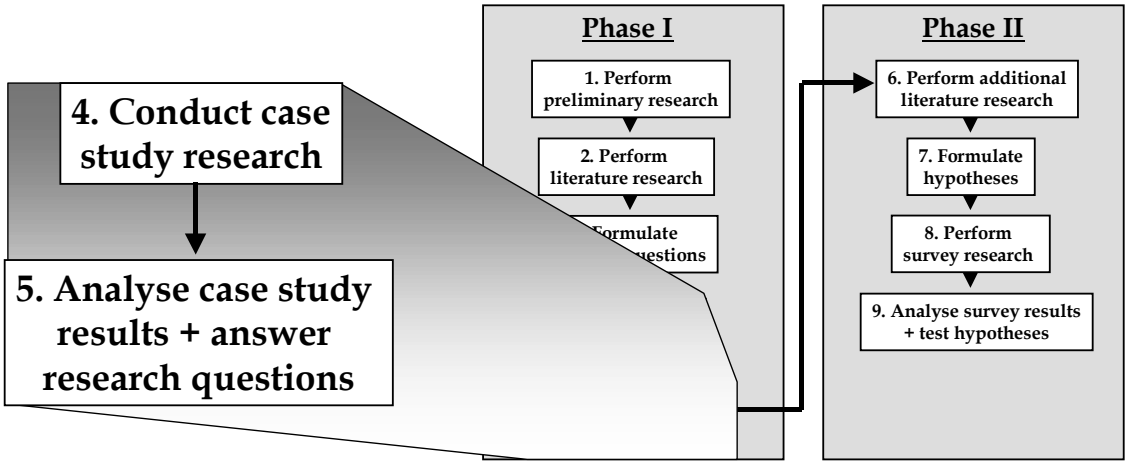


Exhibit 4.1: Research stages described in Chapter 4

4.1 CASE STUDY APPROACH

As was stated in the previous chapter, relatively little concrete information is found in the literature about the influence of behavioral factors on the implementation and use of a performance management system, CSFs, KPIs, and the BSC (Martins, 2000; Vagneur and Peiperl, 2000). That is why research into this topic has to be explorative in nature by using an in-depth study. Basically, an in-depth study consists of a case study in which attention is strictly focused on one or a limited number of cases (Langfield-Smith, 1997). For phase I, the case study method was chosen to explore the research questions developed in the previous chapter (Kloot, 1997). Jagersma (1993) defines case study research as "an inductive empirical research strategy that is aimed at studying, on a previously specified level of aggregation, one or more cases at one or more moments in time by one or more researchers." In recent years, several authors have stated that the case study method leads to sound scientific research (Jagersma, 1993; Yin, 1994; Biemans and Van der Meer-Kooistra, 1994). The exploratory case study research is used to find answers on the previously drafted research questions. On the basis of the results, hypotheses will be drafted. These are tested by means of a survey, in phase II of the study.

The research methods used during the case study, the results, and the interpretations of these results have to be described in such a way that afterwards checks and criticisms of the research are possible. Yin (1994) mentions a number of criteria that have to be satisfied in order to produce sound case study research, as well as techniques to satisfy these criteria. Listed below are the techniques mentioned by Yin and a description of how these have been applied in this research:

- *Construct validity* – Yin defines this as establishing correct operational measures for the theoretical concept being studied. A specific danger in this respect with case study research is that the researcher fails to develop a sufficiently operational set of measures and uses subjective judgements to collect data. Before the case studies were carried out in this research, the theoretical concept was drafted, consisting of the research questions with regard to behavioral factors, which themselves are based on behavioral factors. During the case studies, several sources of information have been used. Several managers have been interviewed, who were all differently involved in the performance management system: either as user, project sponsor, controlled system, or controlling system. In addition, a questionnaire and document research have been applied.
  A "chain of evidence" has been set up by establishing a so-called case study database. In this data base, all research activities, results, interpretations, and conclusions, per case study organization have been recorded in such a way that following an audit trail is possible. All case studies have been described in a standard format and layout. The case descriptions have been reviewed and checked by the contact persons and several managers at the case study organizations, and have subsequently been discussed by the evaluators with the researchers. Final approval was obtained from the organizations with regard to the content of the case descriptions.
- *Internal validity* – Yin defines this as establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships. A specific danger in this respect with case study research is that the researcher infers that a particular event resulted from some earlier occurrence without being absolutely sure about the correctness of this inference. In this research, "explanation building" was used to analyze and explain the results of the studies. "Pattern matching" was used to compare the results from the case studies with the research questions to establish whether the theoretical behavioral factors were indeed found to be important in reality at the case study organizations.
- *External validity* – Yin defines this as establishing the domain to which a study's findings can be generalized. Case study research relies in this respect on analytical generalization, in which the researcher is striving to generalize a particular set of results to a broader theory. For this, the theory has to be tested through replications of the findings in other case studies. In this research, case studies were carried out at three different organizations. Both literal replication, in which specific behavioral factors were expected to be important at all the organizations, and theoretical replication, in which specific behavioral factors were expected to be important in one organization while, at the same time, they were not important at another organization, were applied.
- *Reliability* – Yin defines this as demonstrating that the same study can be repeated with the same results. The goal of reliability is to minimize the errors and biases in the study. In this research, an elaborate and detailed case study protocol was used (see Appendix C). This protocol contains an activity plan, an interview list, a questionnaire, a document research question list, and a feedback reporting list of topics. For each case study organization, the acquired data was entered in the case study database. This database contained for each

case study organization interview time schedules, the tailored activity plan, data from interviews and document research, completed questionnaires, case study write-ups, case study results, case study description, and an overview of analyses and conclusions. Three researchers participated in the case study research, so results could be mutually checked and subjective interpretations were avoided. Case descriptions were read by the contact person and various managers at the case study organizations, and then discussed with the researchers. Afterwards, if necessary, adaptations and changes were made to the case descriptions and approval was obtained from the case companies.

The case study approach is based on the model of Biemans and Van der Meer-Kooistra (1994). The reason to choose this model is because it gives a structured approach with adequate room for adjustment in case project activities stipulate this and because it starts with the definition of a clear theoretical concept. This satisfies the requirements of Yin as described above. Biemans and Van der Meer-Kooistra distinguish three steps in their model:

1. Preparation: the research starting points are established and the theoretical concept, the research questions, and the project approach are defined.
2. Execution: the fieldwork, constituting data collection from case study organizations, is executed.
3. Analysis: the results from the fieldwork are analyzed, interpreted, and matched with the research questions.

Exhibit 4.2 gives a schematic overview of the case study approach. After that, a description is given of the way the researchers executed the ten substeps.

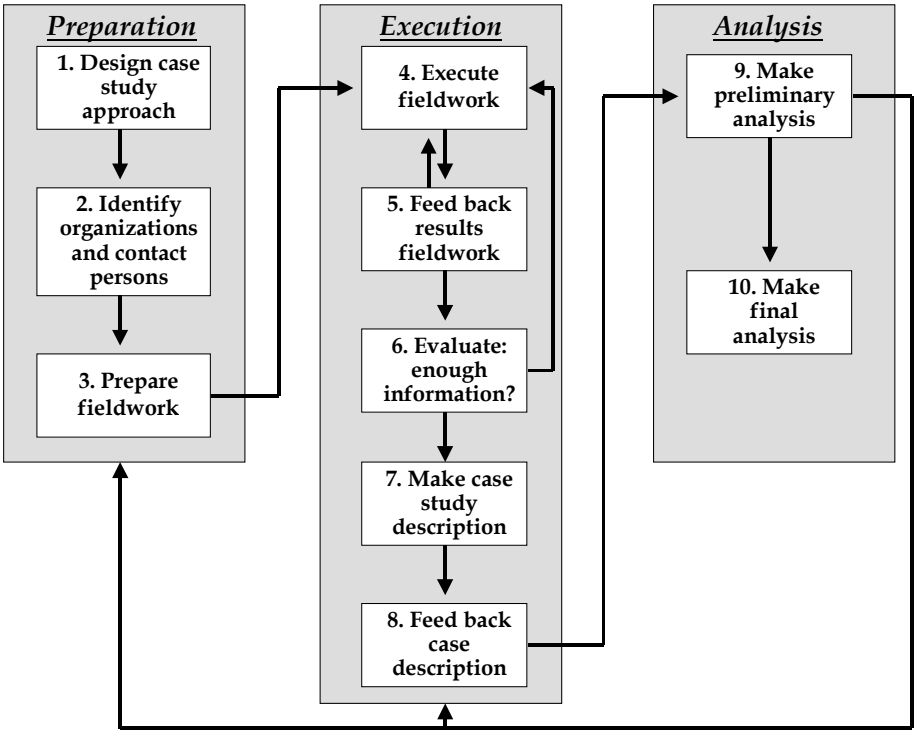


Exhibit 4.2: Case study approach (Source: based on Biemans and Van der Meer-Kooistra, 1994, 'Case study research voor bedrijfskundig onderzoek'*, Bedrijfskunde,66)*

1. Design case study approach

The type of case study organizations was determined: profit and nonprofit organizations in the Netherlands. The study objects were specified: the performance management system of the complete organization or of an organizational unit. A prerequisite for participating in the study was that the participating organization should have had the performance management system at their disposal for at least one to two years at the time of this study. The reason for using this time limit is twofold. On the one hand, the performance management system implementation should be relatively fresh in the minds of the interviewees so questions about the starting and development stages could be answered. On the other hand, the organization should have had sufficient practical experience with the performance management system so questions about the use stage could be answered. If the implementation happened too long ago, distortion may occur because managers have to rely on their memory. As a consequence, their opinion about the performance management system can become distorted (Van der Meer-Kooistra and Vosselman, 2000).
The case study protocol was drafted, consisting of an activity plan, an interview list, a questionnaire, a document research question list, and a feedback reporting list of topics. Appendix C contains the case study protocol. Appendix D gives an overview of the distribution of the operational questions over the three sources of information collection that were used during the case study research: a questionnaire, an interview list, and a document research question list.

2. Identify organizations and contact persons

The researchers approached organizations where either they themselves or colleagues had contacts, to solicit for participation. The following organizations were chosen: Academic Hospital Utrecht, Kadaster (land registry office), and European IT Services (procurement and financial departments of information technology procurement organization).[4] At each case study organization, the board of management appointed a contact person who was responsible for scheduling interviews, having discussions with the researchers and reading the case description. Most of the time, the contact person was either the sponsor of the performance management system or somebody who had been closely involved in its implementation.

3. Prepare fieldwork

As preparation for the fieldwork, the persons to be interviewed were identified in consultation with the contact persons. In general, interviews of one to two hours each were scheduled with (at least) two management team members, the controller, three product managers, the information manager and the performance management system project manager. In addition, the persons who were going to be asked to complete the questionnaire were identified. These were people, selected from all management levels in the organization, who all had access to the performance management system. A memo was sent out to all participating managers, explaining the purpose of the research, the interview, and the questionnaire.

[4] At the organization's request, the company name has been changed.

General information about the case study organization was collected, such as annual reports, examples of management reports and descriptions of the organization. The contact person was asked to give a presentation about the study to the management team and other interested managers to increase support for the research.

4. Execute fieldwork

The fieldwork was performed by three researchers. The fieldwork was performed in a time span of four weeks to make sure the acquired data from the interviews was based on the same organizational situation and to be able to give timely feedback to the contact person and the organization. Data was acquired using three methods: through an anonymous questionnaire, interviews, and document research. The questionnaire was distributed to a majority of the managers who had the performance management system at their disposal. The questionnaire focused on the purposes the managers used the performance management system for and their attitude toward the performance management system. No questionnaire was distributed at case company EIS because permission was not given for this. The reason for this was that the organization at that time had to contend with absenteeism due to illness, which caused understaffing. The lack of this information source was compensated by one of the researchers who had been closely involved in the implementation of the performance management system (as the project leader) and by the fact that the contact person at this organization was a colleague consultant, who had been working at this company for the last two years and could provide much information to the researchers.
Interviews of one to two hours each, using a structured interview list, were held with the contact person, the sponsor of the performance management system, the project manager of the performance management system implementation, five to ten users of the performance management system and the person responsible for the performance management system reporting. Not all questions were asked to all interviewees; a selection was made depending on the function of the interviewee. It was guaranteed, however, that overlap existed between the questions, so consistency checks could be made. Document research was done, using a structured review list of the management reports, the information system (if present), user manuals and process descriptions of the reporting process, project documentation, and minutes of management team meetings about the performance management system.

5. Feed back results fieldwork

Interview write-ups were made of all interviews. These write-ups were sent back to the interviewees. The interviewees checked the write-ups and returned these with remarks and their written approval, to the researchers. The researchers, if necessary, then made updates to the write-ups. The results of the document research were written up. This write-up was discussed with the contact person and the person responsible for the performance management system reporting. If necessary, updates were made or additional documents were reviewed.

6. Evaluate: enough information?

After gathering and summarizing the data from interviews, questionnaire and document research, an intermediate check was made on the completeness and consistency of the collected information. For instance, if apparent inconsistencies were found between interviews and questionnaire results, additional short interviews were conducted with users or

with the contact person for clarification. Apart from that, additional document research was done.

7. Make case study description

After approval on all feedback had been received, the gathered information was integrated in a case study description. The case study description was made by means of the feedback reporting list of topics (see Appendix C). The description was checked on comprehensiveness by the other researchers. The case study description contained a table of the behavioral factors and denoted whether the case study organization satisfied a particular behavioral factor, in the researchers' opinion. For this, the data from the three information sources (interviews, questionnaire, and document research) was gathered and discussed by the three researchers. Based on this discussion, the researchers awarded a score, using the following score scheme:

+ = the behavioral factor is satisfied
0 = the behavioral factor is partially satisfied
– = the behavioral factor is not satisfied
NA = insufficient basis to draw a conclusion whether the behavioral factor is satisfied or not

Basically, if the results for a particular behavioral factor from the interviews, document research, and questionnaire were all positive, the researchers awarded a plus (+); if the results were all negative, a minus (–) was given. If the results were either all 0 or not clearly in one direction (e.g. + 0 0, or + – 0), a zero (0) was given by the researchers. A final score for each stage (S, D, and U) was determined by calculating the average of all behavioral factors grouped under that stage. This was done by awarding each + with 1 point, each 0 with zero points, and each – with –1 point, adding these all up and dividing them by the total number of behavioral factors of that stage. If the average was below –0.2, the end result was denoted as being –; for an average above +0.2, the end result was +; and for an average between –0.2 and +0.2, the end result was 0.
The case study description also contained an evaluation made by the three researchers of whether the criteria for regular use were satisfied, again by combining and discussing all the information gathered. A final score was calculated by taking the average of all criteria scores. The following score scheme was used:

+ = the criterion was clearly improved by the performance management system use
0 = it was unclear whether the criterion was improved by the performance management system use
– = the criterion was clearly not improved by the performance management system use

The scores for the human elements and criteria for regular use are given in the case study descriptions in Sections 4.2 through 4.4.

8. Feed back case description

The case-study description was presented to the case study organization by means of a presentation in the management team meeting. Before the presentation, the case study description was provided to the management team members, so they could prepare them-

selves. During the presentation, the findings, analysis, scores and conclusions were discussed, remarks were received and verified, and the case study description was agreed upon with the managers present. After the presentation, a final meeting took place with the contact person and the performance management system sponsor. On the basis of these meetings, the case study description was updated. The finalized case study description was sent to the contact person for a last check and for obtaining final approval.

9. Make preliminary analysis

After finalizing a case study, a comparison was made of the information just gathered with the data from other case studies. The was done to check if the data converged or diverged. If the latter occurred, either additional cases were needed or points of attention for the next case studies were listed. A discussion also took place to determine if the case study approach had to be adapted. In the end, no changes to the study approach took place and no additional case studies were needed.

10. Make final analysis

After all the case study descriptions were finalized and approved, the final analysis took place. The results from the case studies were collected and compared with each other. The results from the final analysis were used to answer the research questions described in Chapter 3. The consequences of the study results for the theoretical concept were identified.

The throughput time of each case study was between four and eight weeks. The number of days spent on each case study, including processing of data and feedback, was approximately 25 to 30 days. The order in which the case studies were performed was as follows: Academic Hospital Utrecht, Kadaster, and European IT Services (procurement and accounting departments). All the case studies took place in 1997.

4.2 CASE STUDY: ACADEMIC HOSPITAL UTRECHT

The Academic Hospital Utrecht (in Dutch: Academisch Ziekenhuis Utrecht, abbreviated as AZU) is part of the health care sector in the Netherlands. The Dutch health care sector has undergone many changes in recent years, caused by increasing competition from private clinics, the separation of care into three categories (high, medium, and low-complex care – each with its own manner of processing), increased use of technology, need for cost control, and increased attention to quality and client (patient) needs. AZU's goal is to anticipate and react to these changes and become one of the largest and most prominent hospitals in the Netherlands.

The reason to perform case study research at AZU was threefold. First, AZU, at the time of the case study, had worked with a performance management system for over a year. Secondly, this performance management system was supported by an information technology tool called AZU score, which was reported to be an example of a system working well. Finally, there were at least 150 users of AZU score, which made the research population fairly large.

4.2.1 Description of AZU

The organizational structure of AZU is built around specialties (Exhibit 4.3). The medical centers provide medical support services for the specialties. The operational services provide general operating supporting services. The board of directors is responsible for managing the divisions, centers, and facilities, and it is accountable to the board of supervisors. This organizational structure is highly decentralized because, as is customary in hospitals, the heart of the organization lies in the medical divisions.

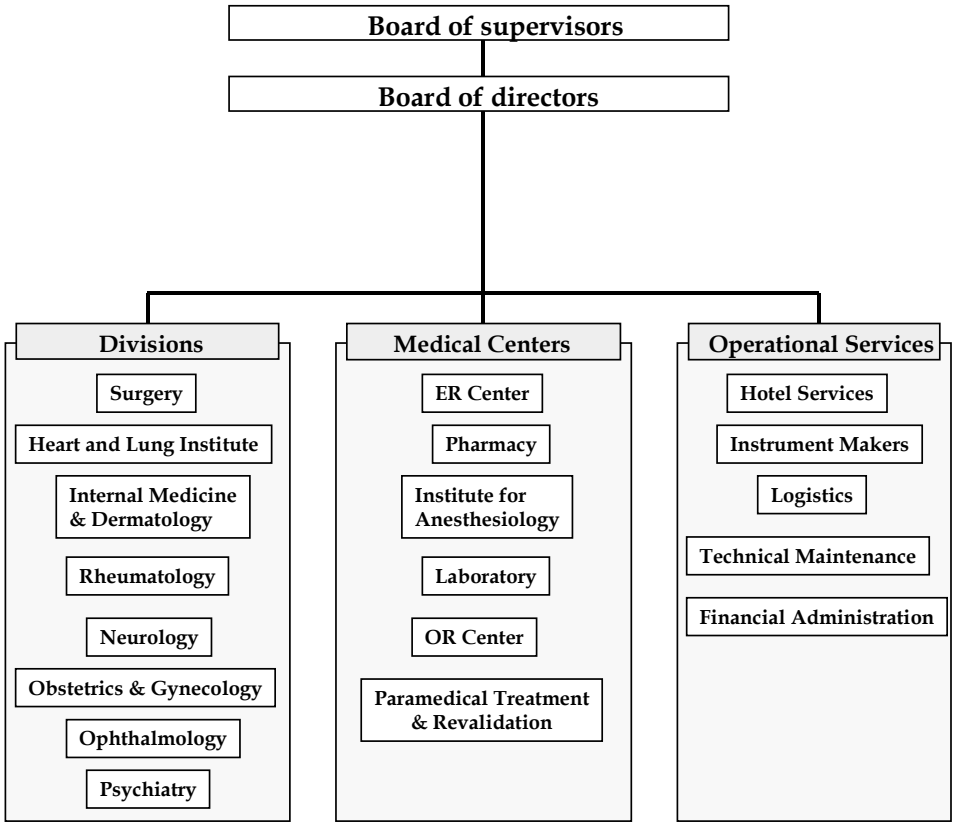


Exhibit 4.3: Simplified organizational structure of AZU

AZU had been steadily growing, both financially and in workforce (Exhibit 4.4). Margins had grown more than turnover through tight cost control and a greater focus on results.

Key Indicator	1994	1995
Turnover (x NLG 1000)	468.881	495.200
Margin (x NLG 1000)	1.027	3.402
Total personnel (full-time equivalents)	3.926	4.114
FTEs, medical and scientific	194	211
FTEs, medical assistants	205	218
FTEs, non scientific	2.907	2.985
FTEs, other	621	700

Exhibit 4.4: AZU key indicators
(Results over 1996 were not available at the time of the case study.)

AZU, being a teaching hospital, had formulated an ambitious strategy together with the medical department of Utrecht University:

- Providing high-quality patient care and service against reasonable costs, no matter the type or complexity of the patient. AZU should be able to compete in these areas with other large hospitals, focusing on the functions of "top referral" (treating patients who need special expertise) and "last resort" (providing care that patients cannot receive elsewhere in the country).
- Providing for the continuity of this high-quality care by providing training and education to future generations of medical personnel, doctors, and specialists.
- Contributing on an expert level to the international advancement of the medical field in carefully selected areas. The goal of this contribution is to better treat current and future patients.

The changes in the Dutch health care sector, the growth of the hospital, and the ambitions of the organization forced AZU to upgrade its management control and information function. A performance management system was needed to better support the organization; it was decided to undertake the AZU score project. The goal of the project was to increase the quality of the management control and information function in such a way that the execution of the strategic and divisional plans could be monitored with objective, reliable, timely, and consistent information. Additionally, this information should make adjustments to the plans possible, if necessary. The project was executed from September 1995 until October 1996, in three phases:

- *Phase 1: Evaluation* – The board of directors identified 19 key performance indicators (KPIs), which were intended to be used for the communication between the board and managers from the divisions, medical centers, and operational services. These indicators were checked by the AZU score project team on various quality criteria: simplicity, reliability, timeliness, regular updates, relevancy, and completeness. The evaluation also checked to determine if the indicator could be influenced by the divisional manager. Thirteen KPIs satisfied the quality criteria more or less, and it was decided to roll these out within the organization.

- *Phase 2: Design and implementation* – For each of the 13 indicators, a work group was established. Each work group was responsible for making a concise definition for the KPI, to track down the method of data collection, registration, and calculation for the indicator and to check the results with the organization (Exhibit 4.5). The work group also oversaw the programming of software, needed for the calculation of the KPI in the newly installed AZU score IT system.

Category	KPI	Definition
Patient mix	Referrals	Number of referrals in the referral categories: specialties, reduction of care, and others
	Profile AZU	Proportion of top referrals versus basic cases of illness
	Management of referral categories	Average difference between planned and actual number of patients per referral category
Cost control	Absenteeism	Absenteeism of employees, caused by illness
	Decrease financial budget	Decrease of the yearly financial operating budget, in actuals versus budget per cumulative month
	Efficiency outpatient clinic	A combination of the number of: function studies, repeat visits, laboratory tests, radiation transactions, radio diagnostics, radio therapy, per admission per outpatient clinic per month
	Efficiency clinic	A combination of the number of: hospitalization days, function studies, laboratory tests, radiation transactions, radio diagnostics, radio therapy, per admission per clinic per month
Service	Admission time outpatient clinic	Average time elapsed between telephonic contact and first appointment at the clinic
	Telephonic accessibility	Chance of pick-up at telephone numbers, important for the accessibility of AZU
	Diagnostic processing time outpatient clinic	Number of diagnostics, per time category of 0–1 day, 2–25 days, and > 25 days after the first appointment at the clinic
	Timeliness clinical letters	Average time elapsed between discharge of patient and sending of clinical letter to patient
	Timeliness outpatient clinical referral letters	Average time elapsed between first appointment at the clinic and sending of referral letter to patient
	Realization surgery hours planning outpatient clinic	Average percentage of a) difference between planned and actual beginning time of surgery visit and b) difference between planned and actual ending time of surgery visit versus planned time of visit

Exhibit 4.5: AZU score KPIs

After all the work groups had finalized, the 13 indicators were implemented in four categories: (1) patient mix (three indicators), (2) cost control (four indicators), and (3) service (six indicators). There were no indicators identified for the fourth category of quality as this category would be filled in during the next stage of the project. An implementation plan was

made, and managers were informed about the project and the 13 KPIs. The indicators were programmed into the AZU score information system (Exhibits 4.6–4.8). This information system had a dashboard layout. The KPI reporting through AZU score was integrated into the regular, periodic AZU management reporting. Managers and board of directors were trained in using the new system and reporting set.

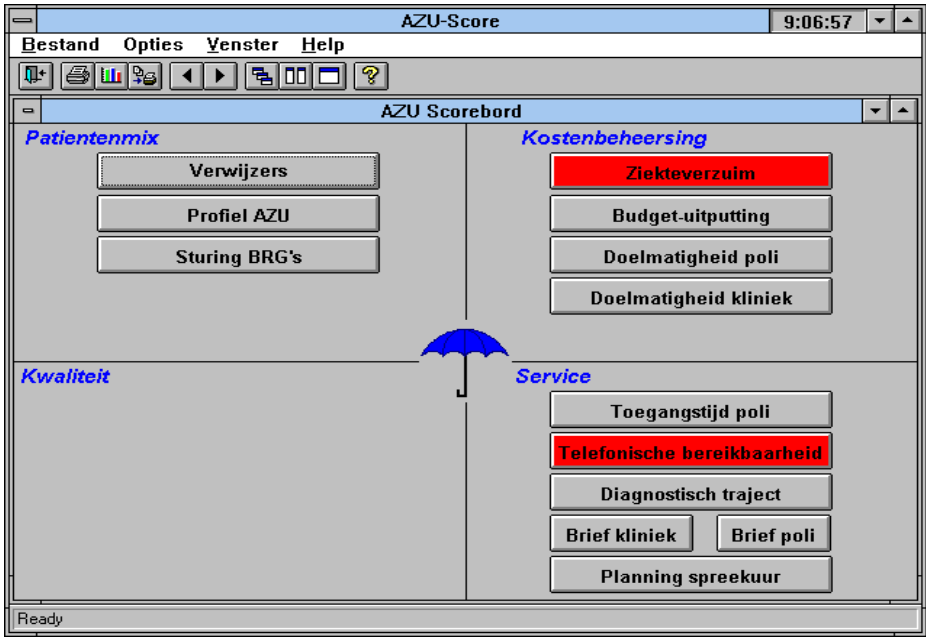


Exhibit 4.6: Opening screen of AZU score, displaying the 13 KPIs (in Dutch) in three categories: Patient Mix, Cost Control, and Service

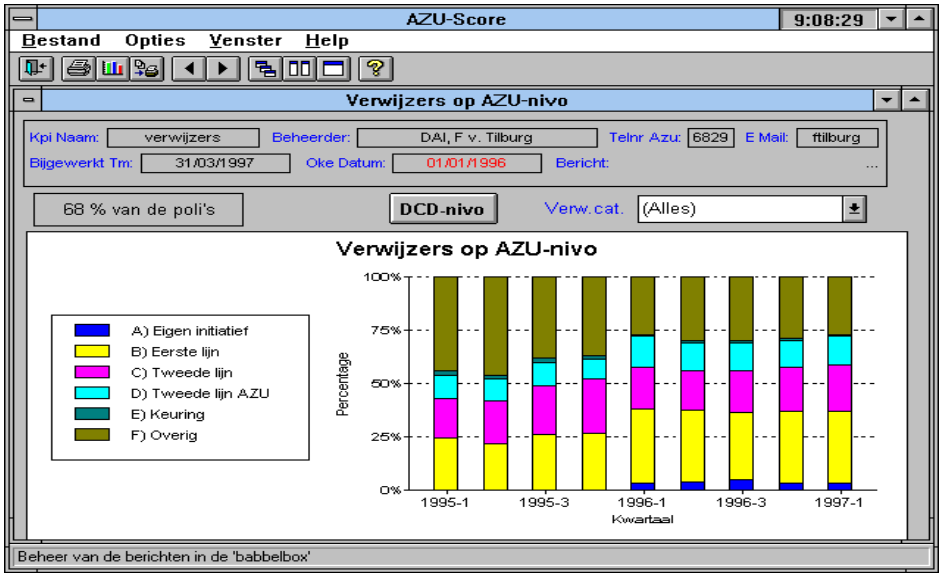


Exhibit 4.7: AZU score category: Patient Mix, KPI: Referrals (in Dutch)

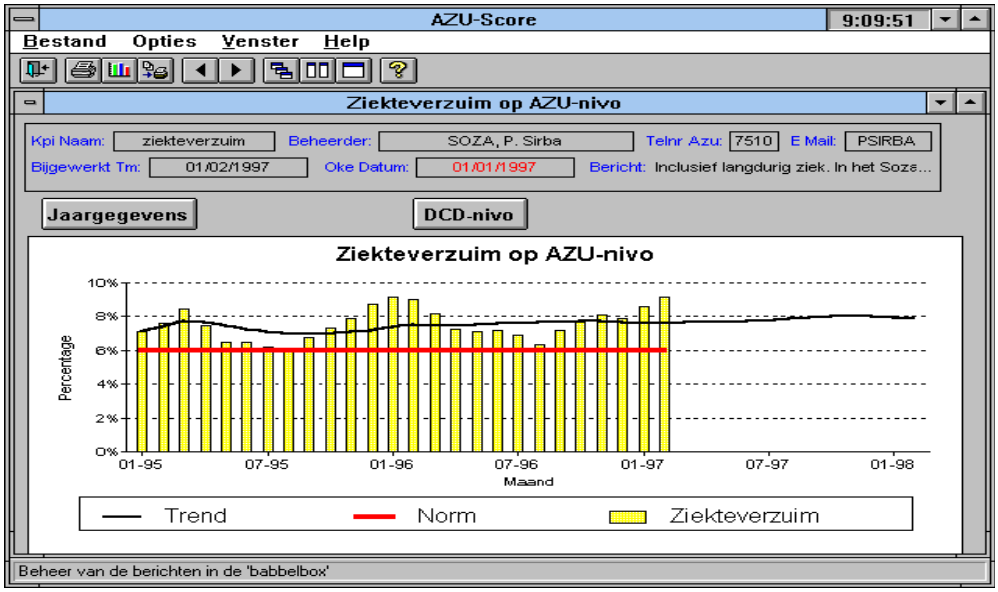


Exhibit 4.8: AZU score category: Cost Control, KPI: Absenteeism (in Dutch)

- *Phase 3*: *Aftercare and maintenance* – In the aftercare phase, the remaining activities regarding implementing certain KPIs were finalized, such as setting up maintenance procedures and adapting the AZU score system. An evaluation of AZU score was also made. Main results of this evaluation were: the performance management system did not match needs of the user sufficiently; the KPI reporting was not yet used enough during the daily activities of the managers; and the frequency with which managers made use of the system varied considerably per person and through time. The reason for this was that most users had not been involved in the choice of the 13 KPIs (only the board was involved). Increased participation of especially medical personnel would help solve this discrepancy. Other results of the evaluation indicated that users missed certain features in AZU score system, like possibilities for trend analysis, forecasting, and year overviews. As a reaction, the board of directors decided to include in the management contracts only those KPIs that managers and board agreed upon. In this way, managers would be more or less forced to take notice of the indicators. In addition, it was decided to start the AZU score II project, which was going to address these issues and which also was going to fill in the quality category.

4.2.2 Description of AZU Case Study

During the case study research, questionnaires have been sent to all 150 users of AZU score. Of these, 62 were returned – a response rate of 41.3%. Interviews were held with 14 persons (Exhibit 4.9).

Position of Interviewee	Duration of Interview (in Minutes)
Chairman, board of directors	60
Vice-chairman, board of directors	45
Staff member, board of directors	60
Manager, Laboratory Center	60
Manager, ER Center (professor of surgery)	60
Manager, Obstetrics & Gynecology	45
Manager, OR Center	45
Manager, Heart and Lung Institute	60
Financial administrator, Heart and Lung Institute	60
Medical specialist, Rheumatology	60
Manager, Financial Administration	60
Financial administrator	45
Financial assistant, Financial Administration	60
Trainee (contact person)	60

Exhibit 4.9: Overview of AZU interviewees

Finally, extended research was conducted, consisting of AZU management reports, a review of the AZU score system, AZU score project documentation and mission and strategy plans. On the basis of this information, the behavioral factors were scored for the three stages: (1) starting, (2) development, and (3) use. The criteria for regular use were also scored. In this section, a summary is given of the results for AZU. Appendix E gives the detailed results and the document with the final scoring for AZU.

Starting Stage

Within AZU, a positive attitude toward performance management existed at the start of the project. One reason for this was that managers (on all organizational levels) expected that the AZU score system would give them a better insight into and grip on what was going on in the organization. Secondly, the chairman of the board of directors expected that managers would start to think more about their performance and how to improve it: "The reporting of KPIs encourages action. At first, people deny the results; but after the reliability of the figures has been shown, they take action." The vice chairman agreed: "Reporting results through AZU score should help to gain improvements because people become more conscious of problems." Another reason was that many managers had already had experience with performance management at previous employers. Consequently, these managers exhibited a positive expectation at AZU about the performance management system. There was some initial resistance among the medical staff, as one of the medical specialists illustrated: "Medical personnel initially saw the introduction of AZU score as a shift in power structure: it is a tool to manage them, instead of them managing the tool."
The decision to start with AZU score was taken exclusively by the board of directors without involvement of the managers. As a consequence, the managers were unclear as to when the

project actually had started. For example, dates between 1991 and late 1994 were mentioned, while the project actually started in 1995. The starting time may not have been optimal because at that time a lot of things were going on at AZU. There existed a hectic work situation with a lot of special projects being undertaken, like improving patient satisfaction, defining referral categories, establishing cost prices for medical services, opening of outpatient clinics and the integration of AZU with a children's hospital. As a result, the board of directors could not always pay enough attention to the AZU score project.
The researchers concluded that the final score for the starting stage at AZU was a 0, which indicates that the behavioral factors for this stage were partially satisfied.

Development Stage

The AZU managers were involved only to a small degree in the development of the KPIs. The AZU score system was initiated by the board of directors, being the main user of the new system. For this reason, the directors chose the KPIs to cover their responsibility areas. During demonstrations of the system, managers were asked for their reaction on the system. The managers did not participate in choosing and defining the KPIs or screen and reporting layouts, or in the setting of targets. This resulted in generic, AZU-wide indicators, which had less relevance for lower levels in the organization because they were not specific enough.
"The developed KPIs are too generic for me to be able to steer the people in my center", stated the manager of the ER Center. And the manager of the OR Center suggested: "AZU score users should be more involved in defining KPIs and in setting targets for these. This would definitely increase the support basis and the use of the system. Users have the feeling the project team does not know enough what users really need and want."
For this reason, the KPIs did not cover enough of the business activities and the strategic objectives of the divisions, centers and facilities. Nonetheless, the AZU score system turned out to be a user-friendly system with a clear dashboard, extra information (KPI definitions, relevance of KPI for the strategy, registration and calculation method), and clear help texts, which helped managers to understand and comprehend quickly the information in the system. AZU score had a clear internal purpose, aimed at supporting internal management, and there was hardly any involvement from external stakeholders.
The researchers concluded that the final score for the development stage at AZU was a –, which indicates that the behavioral factors for this stage were insufficiently satisfied.

Use Stage

The positive attitude of the AZU managers toward performance management that they displayed at the start of the project was still there after more than one year of use of AZU score. The results of the KPIs were not threatening as long as the data was reliable and the KPI definitions were solid.
The manager of the OR Center explained: "If results are under target, we call it a crisis and then we work together as a team to solve the problem. For this, we can use the system."
Generating the data needed for the AZU-score system did not cost managers too much effort and, they felt the time allotted to working with the system was reasonable. The information from the AZU score system was seen by a group of managers as steering and managing information that provided more insight into critical issues.
However, the AZU score system did not seem to be a dynamic management tool: the system did not play a prominent part in the planning and control cycle of AZU, and not all managers

used the system regularly. There were several reasons for this. The information from the system was not yet tailored to the various management levels, making it less relevant to the managers. The managers were not involved in making analyses and forecasts, diminishing the added value of the system for supporting the managers in their daily activities. Many managers did not have insight into the relationships between the KPIs themselves and between the KPIs and financial results, making it difficult for them to improve their performance with the help of AZU score. The board of directors did not visibly use the system themselves, so managers did not know how important the directors considered AZU score to be for the continuity of AZU. The managers were not held accountable by the board for the KPI results, making the use of AZU score rather noncommittal. There was no link between AZU score and the reward structure, diminishing the incentive to improve. Finally, several medical managers stated that the difference between medical and administrative members was an important reason for the lack of use. As a medical specialist commented: "KPIs are often defined differently by medical personnel than by managers. This gives rise to many discussions. Doctors and medical personnel are not used to talking about their work in process terms. For them, numbers and times are not relevant and they should not be held accountable for these. They are raised to think about their work in qualitative terms. Their language is therefore quite different from administrative managers. To get the two groups working together better requires a change in language, a change in thinking and a change in attitude." The manager of Laboratory Center agreed: "AZU score appeals more to the administrative managers than to the medical staff. The willingness to use the system has to come from the people themselves. However, doctors are more interested in the well-being of their patients than in management issues. This attitude is changing. Now two doctors have become part of the management team: this changes their frame of reference."
The researchers concluded that the final score for the use stage at AZU was a 0, which indicates that the behavioral factors for this stage were partially satisfied.

4.2.3 Results of AZU Case Study

Exhibit 4.10 gives the scores as allocated by the researchers for the behavioral factors in the starting, development and use stages. For each stage the final score, as allocated by the researchers, is also given.

Behavioral Factor	Analysis	Score
Starting Stage		
Managers accept the need for performance management.	There was a positive starting attitude toward AZU score because managers saw the system as necessary for the continuity of the AZU organization.	+
Managers have earlier (positive) experiences with performance management.	There was a positive starting attitude toward AZU score because many of the managers had previous positive experience with performance management.	+
Managers agree on the starting time.	It was not possible to distil a clear starting point for the project because managers' opinion on this was divided. Their opinion was also divided on the suitability of the starting time of the project.	0
Managers have been involved in decision making about the project starting time.	The board of directors took the decision to implement AZU score; managers were not involved in the decision process.	–

Behavioral Factor	Analysis	Score
Managers work in a stable, relatively tranquil environment.	At the starting time of the project, there was a turbulent and hectic working situation, among other things due to the merger with another hospital.	–
Final Score Starting Stage		**0**
Development Stage		
Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	The board of supervisors did not have an overriding influence on the development of AZU score. Consequently, the development of AZU score was internally focused, with some consideration for external requirements.	+
Managers understand the CSF/KPI/BSC reporting.	AZU score turned out to be a user-friendly system, with clear help texts, so managers could easily understand the KPI information.	+
Managers understand the meaning of KPIs.	Managers were insufficiently involved in the definition of KPIs. As a consequence, there were regularly discussions about KPI meanings, especially between medical and managerial personnel because not all managers had the same knowledge about the KPIs.	0
Managers have insight into the relationship between business processes and CSFs/KPIs.	The relationship between business processes and CSFs/KPIs was insufficiently crystallized out.	0
Managers can influence the KPIs assigned to them.	Managers were insufficiently involved in the assigning of KPIs to individuals. As a consequence, it was unclear which manager was responsible for which indicator.	0
Managers have insight into the relationship between strategy and CSFs/KPIs.	The KPIs did not match the strategy responsibility of managers completely. In addition, the relationship between strategy and CSFs/KPIs was insufficiently crystallized out.	–
Managers have an active role during the development stage of the performance management system project.	Managers were insufficiently involved in the project. They were informed through (voluntary) presentations, in which sometimes their feedback was asked on certain issues.	–
Managers are involved in defining KPIs.	Managers were not involved in the definition of KPIs. Their opinion was asked about indicators that were previously defined by the project team.	–
Managers are involved in setting KPI targets.	Managers were not involved in target setting. This was, among other things, because (initially) targets were only set for three of the 13 KPIs.	–
Managers' KPI sets are aligned with their responsibility areas.	The KPI sets did insufficiently match the responsibility areas of the managers. Several indicators were missing in the sets of the divisional and center managers.	–
Managers are involved in making the CSF/KPI/BSC reporting layout.	Managers were not involved in making the reporting layout. Their opinion was asked on layouts that were previously defined by the project team.	–

Behavioral Factor	Analysis	Score
Managers use the CSFs/KPIs/BSC that match their responsibility areas.	Managers were insufficiently involved in the assigning of KPIs to individuals. No formal accountability setting between board and managers took place.	-
Managers accept the promoter.	The organization did not recognize a clear project sponsor.	-
Managers are actively communicating about the performance management system project.	There was insufficient data to be able to judge this.	NA
Managers are informed about the status of the performance management system project.	There was insufficient data to be able to judge this.	NA
Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	There was insufficient data to be able to judge this.	NA
Managers see the promoter spends enough time on the performance management system implementation.	There was insufficient data to be able to judge this.	NA
Managers find the performance management system relevant because it has a clear internal control purpose.	There was insufficient data to be able to judge this.	NA
Final Score Development Stage		**-**
Use Stage		
Managers do not get discouraged by the collection of performance data.	Less than 25% of the data had to be collected manually, making the collecting and reporting of the KPIs very efficient.	+
Managers have enough time to work with their CSFs/KPIs/BSC.	On the one hand, it did not take managers too much time to work with AZU score due to the easy of operation. On the other hand, managers have enough time to work with the system, as part of their daily activities.	+
Managers do not experience CSFs/KPIs/BSC as threatening.	The results of AZU score were not considered to be threatening by the managers. Managers communicated in positive terms about the AZU score system	+
Managers' results on CSFs/KPIs/BSC are openly communicated.	All users had access to all the information in the system (i.e., every KPI for AZU total and the individual divisions).	+
Managers' activities are supported by KPIs.	Managers who used the system stated they gained a better insight into critical issues and bottlenecks, and also had a better basis for their decision and action taking.	+
Managers trust the performance information.	There were many discussions about the reliability of the KPI results, caused by limited insight of managers into the underlying data and by insufficient registration of important data by various divisions/departments. This unreliability was sometimes used as an excuse for not	0

Behavioral Factor	Analysis	Score
	using the AZU score system. From a more objective viewpoint, the data appeared to be quite reliable.	
Managers are involved in making analyses.	Managers irregularly made analyses during work meetings, on the spot.	0
Managers trust good-quality analyses.	The analyses were open and transparent. However, these analyses were only made infrequently, which did not improve their quality.	0
Managers use the performance management system regularly during the planning and control cycle.	Just after the time of the case study, the information from AZU score would become a standard discussion item during the quarterly meetings between the board of directors and managers (no + was awarded because this was not a reality yet).	0
Managers realize the importance of CSFs/KPIs/BSC to their performance.	Managers, who used AZU score irregularly, sometimes had difficulty seeing how they could improve their performance on the KPIs.	0
Managers have insight into the relationship between KPIs and financial results.	A direct and clear relationship between KPIs and financial results was lacking, caused among other things by inaccurate cost prices of medical services.	–
Managers have insight into the relationship between cause and effect.	Managers did not (yet) think structurally about the relationship between KPI results and the causes for these results.	–
Managers are involved in forecasting.	Forecasts were generated automatically by the AZU score system, based on certain mathematical algorithms. Managers were not involved in making forecasts.	–
Managers find the performance management system relevant due to regular evaluations.	There were irregular evaluations of the relevance of the KPIs in AZU score.	–
Managers agree on changes in the CSF/KPI set.	Managers would make suggestions for changes in AZU score, but these were only implemented sparsely.	–
Managers' use of the performance management system is stimulated by the reward structure.	There was no formal link between managers' performance on AZU score and the rewards of managers.	–
Managers clearly see the promoter using the performance management system.	The use of AZU score by the board of directors was not very visible to the organization; many managers did not know how important the Directors considered the performance management system to be.	–
Managers and their controlling systems have a mutual trust	There was insufficient data to be able to judge this.	NA
Managers are stimulated to improve their performance.	There was insufficient data to be able to judge this.	NA
Managers trust good-quality forecasts.	There was insufficient data to be able to judge this.	NA
Managers can use their CSFs/KPIs/BSC for managing their employees.	There was insufficient data to be able to judge this.	NA

Behavioral Factor	Analysis	Score
Managers have sole responsibility for a KPI.	There was insufficient data to be able to judge this.	NA
Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	There was insufficient data to be able to judge this.	NA
Final Score Use Stage		**0**

Exhibit 4.10: Behavioral factor scores for the starting, development, and use stages at AZU

Criteria for Regular Use

Exhibit 4.11 gives the scores allocated by the researchers for the criteria for regular use, which indicate whether the implementation of the new AZU score system can be considered to be successful.

Criterion for Regular Use	Analysis	Score
Plans for follow-up projects	There were plans for further development of AZU score, called AZU score II.	+
CSFs, KPI, and BSC incorporated in the regular management reporting	CSFs and KPIs were incorporated in the formal management reporting to the managers.	+
Organizational results improved, objectively	The results of AZU were slightly improved since the start of the project.	0
Increased performance management system use by managers	Managers differed about the degree of use of the AZU score system, some used the system more, others less. Available system documentation indicated a slight decrease in performance management system use.	0
Difference in attitude toward performance management, between project start and currently	There was not a great difference in attitude toward AZU score, between project start and the time of the study.	0
Regular communication about KPI results	Managers differed about the degree of communication about the KPI results. There was structured communication during the quarterly meetings, but apart from that there was little communication among managers about AZU score.	0
Organizational results improved, through performance management system use	Managers differed about the degree of improvement, caused specifically by the use of AZU score. Many managers doubted there were any improvements.	–
Final Score Criteria For Regular Use		**0**

Exhibit 4.11: Criteria for regular use scores for AZU

The use of the AZU score system could not yet be called an unqualified success. Although most managers had a positive attitude about the system, it seemed to have more value for the board of directors than for the divisional, center, and facility managers. As one of the managers commented: "The sponsor has a performance management way of thinking, which is very important for a project like this. This means that, to make AZU score a real success, a change in culture and a similar management style [to that of the sponsor] is required." The chairman of the board elucidated: "In a professional organization like AZU, the emphasis in the management style lies on communication, the strength of your arguments and on consensus. The board has to be a supervisor, coach and mentor at the same time. Team work is crucial. To support this, a system like AZU score is needed and by using the system themselves, the board of directors shows the organization that the system and its use is important."
Communication about the results of AZU score varied: officially, the results were discussed during the quarterly meetings between directors and managers, but the questionnaire showed that 60% of the managers spoke on average less than once a month about the AZU score results. In addition, the performance of the organization had not significantly improved through the use of AZU score. Reasons for this were the lack of relevant divisional, center and facility indicators, and the fact that it was a relatively new system which still contained unreliable data.
Meanwhile, the first steps had been taken to improve the system, by starting with project AZU score II, which will refine the current KPIs and also add new ones (for the quadrant quality). The outcome of this project will most probably determine if the implementation of a performance management system at AZU turns out to be a worthwhile effort. The chairman of the board promised a change in approach for this new project: "In the AZU score II project, medical personnel and doctors will be more involved to prevent conflicts between them and administrative managers."

The researchers concluded that the final score for the criteria for regular use at AZU was a 0, which indicates that the implementation of AZU score was a partial success.

4.3 CASE STUDY: KADASTER

The Kadaster is the land registry office of the Netherlands. The organization collects, accepts, mutates, maintains, and provides information about immovable property and real estate; processes license and act requests for property transfers and mutations; collaborates in the planning of land use; and maintains the network of coordination points that is used while surveying the land. The Kadaster has branches in 15 towns.

The reason to perform case study research at Kadaster was twofold. First, Kadaster had, at the time of the case study, already worked with a performance management system called control variables for over three years. There were 80 users. Secondly, the strategy of Kadaster indicated that the organization wanted to have a pivotal position in the capturing and distribution of property and real estate information. To be able to better achieve this position, the Kadaster was transformed from a governmental agency to an independent agency, giving the organization more freedom. This meant the performance management system had been developed as part of a major organizational change and was now used in a holding structure; the control variables were specifically used by the head office in managing the profit centers. In this environment of change, behavioral factors may turn out to play a big role.

4.3.1 Description of Kadaster

The organizational structure of Kadaster consists of a board of directors, holding staff, 15 branches (profit centers) and the Center of Information and Geodetic Technology (IGT). Each branch consists, among other things, of the departments Real Estate Information (REI), Land Surveyors (LS), Legal Affairs, and Controlling. The Kadaster has a fair number of external stakeholders: the Minister of Housing, Planning, and Environment; the board of supervisors; the unions; and a user council (Exhibit 4.12). Each branch has its own internal management reporting for internal control. This branch reporting is used as the basis for reporting to the head office.

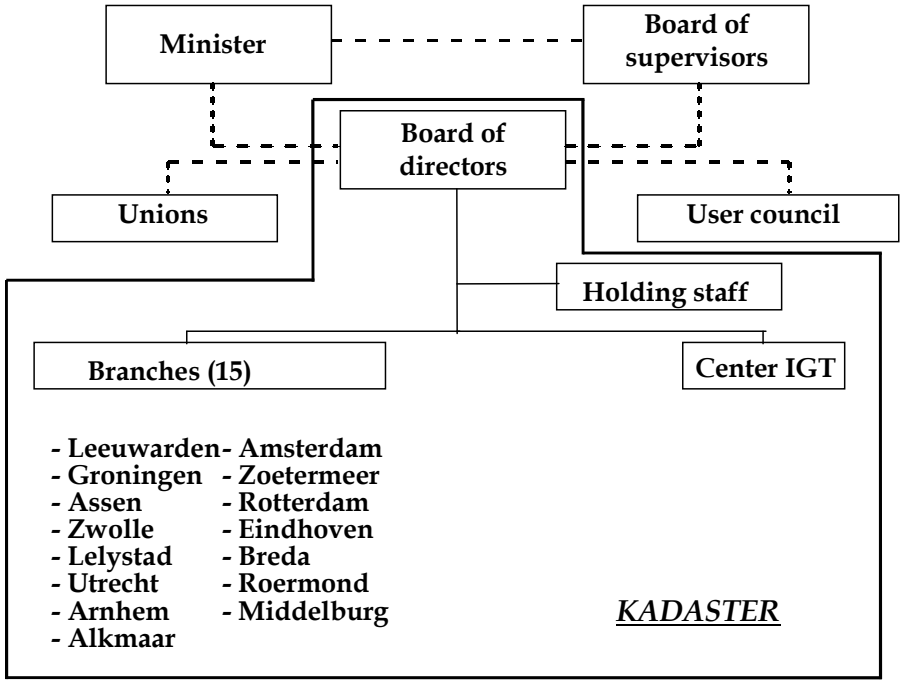


Exhibit 4.12: Simplified organizational structure of Kadaster

In 1991 a new concept for the planning and control cycle was introduced at Kadaster. As a logical consequence of this new concept, the first ideas about a performance management system were suggested. In 1992, the definition of critical success factors (CSFs) and key performance indicators (KPIs – at Kadaster called control variables, or CVs) started, and at the beginning of 1993, these were implemented. In 1994, Kadaster was turned into an independent agency. At the time of the case study research, 1997, Kadaster was reorganizing, adjusting the workforce in numbers and skills to better match the new status and activities of the organization.

The performance management system project was executed in several steps:

- *Step 1* – Defining the CSFs on the basis of Kadaster's strategy.
- *Step 2* – Defining the criteria for the CVs. These should become part of the regular reporting from branches to head office. The idea was initially that each management level should

have its own CV set. These sets would match the various responsibility areas: a strategic set for the board of directors, a tactical set for the branch managers, and an operational set for branch department heads. These sets would be defined with participation from various management levels. The CV set should be adjusted as soon as the strategy, business processes, or CSFs change. The organization decided to first start developing the CVs for the strategic set. These CVs should then all (in time) be reported by each branch to the board. The following set was defined by a project team and presented for approval during the central management team meeting (Exhibit 4.13).

CSF	CV	Comment
Cost coverage and solvability	None	The current reports (Profit & Loss, Balance Sheet, Total Budget Overview) provide all the financial information that is needed. No additional CVs are needed.
Expense coverage	None	The current report (Liquidity Planning) provides the information that is needed. No additional CVs are needed.
Quality of service	Throughput time mass output	The average time it takes to process license/act requests.
	Authorization time	The average authorization time of license/act requests.
	Work inventory license/act requests	The average work backlog, in numbers, of license/act requests.
	Age license/act requests	The average elapsed waiting time (before processing takes place) of license/act requests.
Efficiency	Productivity	The number of processed license/act requests versus number of personnel.
	Other activities of REI and LS departments	Time spent on other activities versus time spent on productive activities. For the departments REI and LS, this ratio is reported in order to make sure no transfer of hours takes place to the category "other activities" to boost performance.
	Direct personnel costs of REI department	Sales turnover versus actual production costs.
Entrepreneurship	Other costs	Sales turnover versus other costs. If sales turnover decreases, other costs should also decrease.
	Open Accounts Receivable	The average elapsed time between sending out and collecting on accounts receivable.
Workforce	Various human resource CVs	These human resource CVs were going to be developed at a later stage, and have not been included in the case study.
Competitive position	None	At the time of the case study research, no CVs had been developed yet for this CSF.

Exhibit 4.13: Kadaster's CVs

- *Step 3* – Defining the chosen CVs. This included defining the source of data for the CV, frequency of reporting, the organizational unit for which the CV had to be reported, and report layouts (Exhibit 4.14).

Profit & Loss Account	**Internal report** *Branch*					
	Month		**Cumulative**		**Year Plan**	
	NLG	***% vs. total branch turnover***	***NLG***	***% vs. total branch turnover***	***NLG***	***% vs. total branch turnover***
Branch turnover:						
Statutory activities	1323	80%	4059	77%	14301	87%
Market activities	311	19%	691	13%	2088	13%
Mutation work inventory	20	1%	520	10%	0	0%
Production own account	0	0%	0	0%	0	0%
Total branch turnover	1654	100%	5270	100%	16388	100%
	724	44%	2160	41%	8580	52%
Branch costs:	62	4%	186	4%	700	4%
Salaries	75	5%	223	4%	795	5%
Social premium costs	–252	–15%	–527	–10%	–801	–5%
Depreciation	408	25%	803	15%	2541	16%
Mutation provisions	464	28%	1350	26%	5626	34%
Outsourced work	0	0%	0	0%		0%
Other branch costs	1481	90%	4195	80%	17441	106%
Allocated overhead (Center IGT)	173	10%	1075	20%	–1053	–6%
Total branch costs	–1	0%	–2	0%	–6	0%
	172	10%	1073		–1059	–6%
Branch turnover – costs	0	0%	0		0	0%
Turnover claims						
Result regular branch activities						
Extraordinary income						
Result branch	172	10%	1073	20%	–1059	–6%

Control variables	**Month**	**Cumulative**	**Year Plan**
Absenteeism:			
Management team	0.0	0.0	4.0
Controlling Department	8.9	11.1	4.0
LS Department	6.0	7.7	4.0
REI Department	3.5	2.8	4.0

Exhibit 4.14: Example of branch report (translated from Dutch)

The CVs were defined in such a way that the target for each CV and for each branch was put on 100. Through this indexing, the branches could be made comparable, irrespective of the actual volumes at the branches (Exhibit 4.15).

	Productivity Real Estate Information					Productivity Land Surveyors				
Branch	**1993**	**1994**	**1995**	**1996**	**1997**	**1993**	**1994**	**1995**	**1996**	**1997**
Groningen	95	94	101	101		106	98	101	96	
Leeuwarden	107	92	98	98		109	96	97	98	
Assen	103	99	106	107		113	99	102	101	
Zwolle	96	107	103	102		101	105	102	100	
Arnhem	95	99	101	100		103	95	103	104	
Utrecht	105	102	102	108		108	97	101	103	
Lelystad	135	101	99	93		155	91	98	99	
Alkmaar	102	103	98	104		109	99	96	97	
Amsterdam	102	105	96	96		99	104	102	105	
Zoetermeer	–	93	102	101		104	98	102	99	
Rotterdam	115	98	105	105		91	97	98	98	
Middelburg	144	107	99	100		113	95	98	98	
Eindhoven	106	110	100	103		106	100	93	99	
Breda	94	104	98	92		104	102	97	98	
Roermond	98	87	98	98		87	99	94	98	
Average	**107**	**100**	**100**	**101**		**107**	**98**	**99**	**100**	

Exhibit 4.15: Indexed CV report, showing results for all branches (translated from Dutch)

- *Step 4* – Translating the strategic CVs to the tactical and operational levels (departments and branches). A first setup was made by one of the holding staff departments. The branches were supposed to refine the setup further and complete the definitions for their CVs; however, this did not happen. This is why no examples of these reports can be given here.
- *Step 5* – Evaluation of the current CV sets. Several recalibrated CV sets were the result of this evaluation. These sets were going to be implemented in 1998 (after the time of the case study).

4.3.2 Description of Kadaster Case Study

During the case study research, questionnaires have been sent to 80 users of CVs. Of these, 37 were returned – a response rate of 46.3%. Interviews were held with 18 persons (Exhibit 4.16). These interviews took place at the branches in Leeuwarden, Middelburg, Arnhem and at the head office in Apeldoorn.

Finally, document research was done, which consisted of studying Kadaster management reports, CV project documentation, and mission and strategy plans. On the basis of this information, the behavioral factors were scored for the three stages: (1) starting, (2) development, and (3) use. In addition, the criteria for regular use were scored. In this section, a summary is given of the results for Kadaster. Appendix F gives the detailed results and the document with the final scoring for Kadaster.

Position of Interviewee	Duration of Interview (in Minutes)
Member, board of directors	60
Concern controller, head office	60
Financial staff members (2), head office	60
Director IT, head office	60
Director, Middelburg branch	60
Managers (2), Middelburg branch	60
Controller, Middelburg branch	60
Managers (3), Leeuwarden branch	60
Controller, Leeuwarden branch	60
Director, Arnhem branch	60
Managers (2), Arnhem branch	60
Controller, Utrecht branch	60
Controller, Apeldoorn branch	60

Exhibit 4.16: Overview of Kadaster interviewees

Starting Stage

Within Kadaster, there existed a positive attitude toward performance management at the start of the project, despite the fact that most managers did not have any previous experience with performance management. This was because managers viewed the performance management system as being important for the continuity of the newly formed independent agency. The CVs would make it possible for them to get insight into issues and bottlenecks of the new processes and strategy execution. As the controller at the head office put it: "The advantages of the CVs are that they limit the volume of management reporting, focus attention on a limited set of critical issues, make standardization of reporting over all branches possible, and structure the discussions between the branches and the board."
A branch manager commented: "The advantage of the CVs is that they are a tool to get a better grip on the execution of the strategy. The disadvantage is that they create a degree of pressure: you have the feeling the CVs urge you to become more productive all the time."
The managers at the branches and departments could spend only limited time on the project because they had their hands full with the transition to the new organizational setup and the corresponding change process. The head office took the responsibility for developing and proposing the new indicators.
The researchers concluded that the final score for the starting stage at Kadaster was a +, which indicates that most of the behavioral factors for this stage were satisfied.

Development Stage

Involvement of managers during the development stage was limited. The CVs have been identified at head office with the board of directors as the premier user group. The CVs were

then more or less forced on the branch managers. This was a conscious decision of the head office because the branch managers had to concentrate on the transition to the independent agency status and could not afford to spend (too much) time on the CV project. The directors regarded the CVs as being especially useful in their accountability toward the board of supervisors, although this board did not have any influence on the type of CVs being developed. The directors initially thought the CVs would be less relevant for the internal control of the branches because this would entail further tailoring of the CVs to local circumstances. The head office suggested that the branches take the initiative in this regard, which most of them did. A branch director suggested: "During the development of CVs, people in the branches should be more involved. The CV method is a good one, but not always an easy one. To let people better understand it, they should be educated and should be involved in discussions and in defining the indicators."

At the time of the CV development, there was a clear relationship between strategy, CSFs, and CVs. However, in three years' time, the circumstances of Kadaster had changed and for this reason the organization's strategy had been adapted. Unfortunately, the CVs had not been updated and therefore started to become less relevant for both board and managers. Kadaster had at the time of the case study research just decided to make an evaluation and an update of the CVs.

The researchers concluded that the final score for the development stage at Kadaster was a 0, which indicates that the behavioral factors for this stage were partially satisfied.

Use Stage

All the management levels used the CVs, especially at branch and department levels. According to a member of the board of directors: "A precondition for good use of CVs is having the discipline to only look at the exceptions, being CVs of target, giving freedom to the branches to manage using the CVs, and visible use by the board by challenging the branches on their CV results."

The role of the board of directors had become more passive in this respect, which sometimes had a detrimental effect on the quality of the CV discussion meetings between directors and branch managers. The employees did not recognize the value of the CVs, probably because their exposure to the indicators had been limited up to now.

The results of the CVs were not regarded as threatening because they were clearly listed for all 15 branches and were available for everybody. Sometimes, they were even put on bulletin boards. This was possible because there existed a good relationship between the board and the branches. The culture at Kadaster was characterized as open, focusing on improvement and a loose control environment. A reason for this was, as a board member put it: "The open culture at Kadaster is possible because the CVs cannot be manipulated." Nonetheless, there was a clear accountability tree, including directors who spoke to branch managers about CV results, branch managers who spoke to department heads and department heads who spoke to their staff. Important to keep in mind, according to a branch manager, was that "CVs alone are not enough, you have to know the story behind them. This is especially important if you discuss your results with the board, otherwise the board may be inclined to judge you too fast."

The researchers concluded that the final score for the use stage at Kadaster was a +, which indicates that the behavioral factors for this stage were mostly satisfied.

4.3.3 Results of Kadaster Case Study

Exhibit 4.17 gives the scores as allocated by the researchers for the behavioral factors in the starting, development and, use stages. For each stage the final score, as allocated by the researchers, is also given.

Behavioral Factor	Analysis	Score
Starting Stage		
Managers accept the need for performance management.	There was a positive starting attitude toward the performance management system because managers recognized that such a system was needed in order to be able, as a newly independent agency, to achieve the objectives and targets.	+
Managers have earlier (positive) experiences with performance management.	Managers did not have earlier experience with performance management, but nonetheless they had a positive attitude toward CSFs and CVs.	+
Managers agree on the starting time.	Managers viewed the performance management system as a logical part of the new planning and control concept, so the starting point was considered to be well chosen.	+
Managers work in a stable, relatively tranquil environment.	There was a turbulent work situation in the organization because Kadaster was changing, at that moment, to an independent agency. However, because the CVs were not developed by managers at branche or department level but by a project team at the head office, the branches were not too much affected by the CV project.	0
Managers have been involved in decision making about the project starting time.	The board of directors took the decision to implement a performance management system; branch managers were not involved.	–
Final Score Starting Stage		**+**
Development Stage		
Managers find the performance management system relevant because it has a clear internal control purpose.	The CV report was set up with a clear internal management control purpose.	+
Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	External stakeholders were not involved in the development and therefore did not direct the content of the CV set. Only for the external stakeholder critical information was included.	+
Managers have insight into the relationship between strategy and CSFs/KPIs.	At the time of development, there was a clear relationship between strategy, CSFs and CVs. However, the CV set had not been evaluated and updated since then, so it was felt by the organization that the strategic relevance of the set could be less.	0

Behavioral Factor	Analysis	Score
Managers have insight into the relationship between business processes and CSFs/KPIs.	Opinions were divided about the degree to which the CVs represented the crucial activities sufficiently.	0
Managers are involved in setting KPI targets.	Head office set targets for all CVs, branch managers were limited involved.	0
Managers' KPI sets are aligned with their responsibility areas.	At head office CVs were successfully developed for the board of directors. The development of the tactical and operational CVs was left to the branches themselves, with varying success.	0
Managers understand the CSF/KPI/BSC reporting.	The quarterly reporting for the board of directors had a standardized format that was easy to understand. The branches could make their own layouts, which were difficult to understand for others (like the board and other branches). This was a drawback because the CV reports were used for benchmarking.	0
Managers use the CSFs/KPIs/BSC that match their responsibility areas.	The developed CVs covered the responsibility areas of the board of directors. They provided limited coverage of the responsibility areas of managers because the CV reports were not tailored at all branches.	0
Managers accept the promoter.	During the interviews several persons were mentioned as possibly being the project sponsor. The sponsor was low key and not really known in the organization.	0
Managers see the promoter spends enough time on the performance management system implementation.	The sponsor (a board member) regularly spent (limited) time with the project team.	0
Managers have an active role during the development stage of the performance management system project.	The CVs were developed by the project team, in discussions with the board of directors. It was a centrally led project. Branch managers were not involved in the development stage.	–
Managers are involved in making the CSF/KPI/BSC reporting layout.	The design and layout of the CV reports were developed by the project team. Branch managers were not involved in the development stage.	–
Managers are involved in defining KPIs.	The CVs were developed by the project team. It was a centrally led project. Branch managers were not involved in the development stage.	–
Managers can influence the KPIs assigned to them.	The final choice of CVs was made by the board of directors. The branch managers were not involved.	–
Managers are informed about the status of the performance management system project.	Managers were not informed about the status of the CV project. No discussions took place about the relevance, added value and desired indicators.	–
Managers are actively communicating about the performance management system project.	There was insufficient data to be able to judge this.	NA
Managers understand the meaning of KPIs.	There was insufficient data to be able to judge this.	NA
Final Score Development Stage		**0**

Behavioral Factor	Analysis	Score
Use Stage		
Managers are stimulated to improve their performance.	There was an open, trusting atmosphere and culture in the organization. Everybody was striving toward continuous improvement.	+
Managers' results on CSFs/KPIs/BSC are openly communicated.	There was great openness about the CV results. CV results from all branches were collected and reported together on a ranking list. In some branches the results were put on the bulletin board.	+
Managers and their controlling systems have a mutual trust.	The relationship between board of directors and branch managers was characterized as a mutual trust. There was loose control from the board toward the branches.	+
Managers realize the importance of CSFs/KPIs/BSC to their performance.	Managers recognized the importance of the CVs in supporting their daily activities.	+
Managers do not get discouraged by the collection of performance data.	Less than 25% of the required data for the CVs had to be collected manually. This was deemed quite acceptable by the managers.	+
Managers' frames of reference contain similar KPIs.	A frame of reference was created for the managers through the ranking list: the comparison of the 15 branches on their CV results.	+
Managers are involved in making analyses.	The managers made analyses as soon as actual CV results deviated from the targets.	+
Managers have enough time to work with their CSFs/KPIs/BSC.	The time spent by managers working on their CVs varied from thirty minutes to several days per month. In general, managers were of the opinion they could spend enough time on working with the CVs.	+
Managers do not experience CSFs/KPIs/BSC as threatening.	Performance management was not experienced as being threatening. There was an open culture at Kadaster, aimed at improvement.	+
Managers can use their CSFs/KPIs/BSC for managing their employees.	Managers recognized many advantages in using CVs while managing their subordinates, like the structuring of discussions and the quick gaining of insight into employees' performance.	+
Managers have insight into the relationship between KPIs and financial results.	The relationships between CVs and financial results were not identified nor quantified. However, through the use of the CVs, these relationships were starting to be discerned (implicitly) by the managers.	0
Managers' activities are supported by KPIs.	The CVs supported the managers in their daily activities. Managers formulated and undertook actions, if necessary. However, these actions were not recorded in the management reporting, and could therefore not be checked by the researchers (consequently, a 0 was awarded instead of a +).	0
Managers trust the performance information.	The reliability of the CVs had greatly improved compared to the starting stage. But still many discussions took place, not about the reliability of the data, but about the reliability and accuracy of the CV definitions.	0

Behavioral Factor	Analysis	Score
Managers trust good-quality analyses.	The analyses were in general open and issues surfaced. However, these analyses were not recorded in the management reporting, and could therefore not be checked by the researchers (consequently, a 0 was awarded instead of a +).	0
Managers have sole responsibility for a KPI.	There was a clear accountability for each KPI. The branch manager was responsible for the CVs in his branch, he would appoint department heads. Whether this appointment of accountability took place was unclear for the researchers.	0
Managers clearly see the promoter using the performance management system.	The board of directors discussed the CVs every quarter with the branch managers, sometimes on a high level, sometimes very detailed. There was no evidence the board used the system more often.	0
Managers have insight into the relationship between cause and effect.	The CVs were developed with the board in mind, therefore branch managers could not (directly) see the relationship between cause and effect for their own activities.	–
Managers are involved in forecasting.	Within the organization there was no clarity about the nature of forecasting, that is, what a forecast was. As a consequence, none were made.	–
Managers find the performance management system relevant due to regular evaluations.	Five years after developing the draft CV set, the first formal evaluation took place. The fact that this evaluation took place was not known at the branches.	–
Managers use the performance management system regularly during the planning and control cycle.	The CVs were not a formal part of the planning and control cycle at Kadaster.	–
Managers agree on changes in the CSF/KPI set.	Suggestions for changes in the CV set were not regularly collected. Branch managers felt that if they did make suggestions, no follow-up took place.	–
Managers' use of the performance management system is stimulated by the reward structure.	Results on CVs were not formally linked to the reward structure.	–
Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	There was insufficient data to be able to judge this.	NA
Managers trust good-quality forecasts.	There was insufficient data to be able to judge this.	NA
Final Score Use Stage		**+**

Exhibit 4.17: Behavioral factors scores for the starting, development, and use stages at Kadaster

Criteria for Regular Use

Exhibit 4.18 gives the scores allocated by the researchers for the criteria for regular use, which indicate whether the implementation of the CVs can be considered to be successful.

Criterion for Regular Use	Analysis	Score
Organizational results improved through performance management system use	The performance on the CVs had clearly improved since 1993.	+
Increased performance management system use by managers	Use, measured in time spent on the CVs, had stayed the same. However, managers were of the opinion that their use had become more efficient.	+
Difference in attitude toward performance management, between project start and currently	The attitude of managers toward the CVs was positive, both at the starting point as at the time of the study.	+
Regular communication about KPI results	Every month and quarter the CV results were discussed.	+
CSFs, KPI, and BSC incorporated in the regular management reporting	The CVs were part of the internal, regular management reporting.	+
Organizational results improved, objectively	Opinions were divided about whether the CVs had actually helped in improving organizational performance.	0
Plans for follow-up projects	About half of the managers knew about follow-up plans for the performance management system.	0
Final Score Criteria for Regular Use		**+**

Exhibit 4.18: Criteria for regular use scores, for Kadaster

The use of the CVs in Kadaster can be called successful. Managers still had, after three years of use, a positive feeling about performance management and the use of the indicators was stable. A board member had an interesting point of view on the use of CVs: "Kadaster had a handicap while introducing the CVs: the financial results were so good that CVs were considered to be less important for the continuity of the organization. Several 'bad' years would be good for the use of the CVs." A branch manager agreed: "If the results on the CVs would be worse than they are now, then the indicators would receive more attention."
The organization had worked on improving the performance management system: the reliability of the CVs had improved, a more structured discussion about CV content and results took place, and the added value of the CV reporting was clearly seen in the organization. On top of this, at the time of the case study research, a recalibration of the CVs took place, to make sure the CV set would be relevant (again). The CV reporting was seen as a "living management tool" in Kadaster. The researchers concluded that the final score for the criteria for regular use at Kadaster was a +, which indicates that the implementation of the CVs was a success.

4.4 CASE STUDY: EUROPEAN IT SERVICES

European Information Services (EIS)[5] is part of a multinational organization in the oil industry. It was created in January 1997, when the organization merged with the central information services department of the head office. EIS delivers information technology products (hardware and software) and services to all the group companies. The unit is located in the Netherlands, with representatives at sites in the United Kingdom.

The reasons to perform case study research at EIS was twofold. First of all, two departments of EIS had, at the time of the case study, more than one year of experience with a performance management system based on CSFs and KPIs. Secondly, EIS had used a uniform development approach in both departments, so the expectation was that these departments would be well comparable.

4.4.1 Description of EIS

EIS consists of seven units (Exhibit 4.19). Five of these units provide services to customers at the oil company sites, two units provide supporting services to these five units, and to the EIS management team. The case-study research focuses on two departments in the Finance & Planning (F&P) unit, which consists of five departments. The Financial Accounting department (FA) provides financial accounting support to EIS locally at the sites, after which consolidation in the Netherlands takes place. The Commercial Services (CS) department provides procurement support of IT products and services from third parties on behalf of the EIS sites.

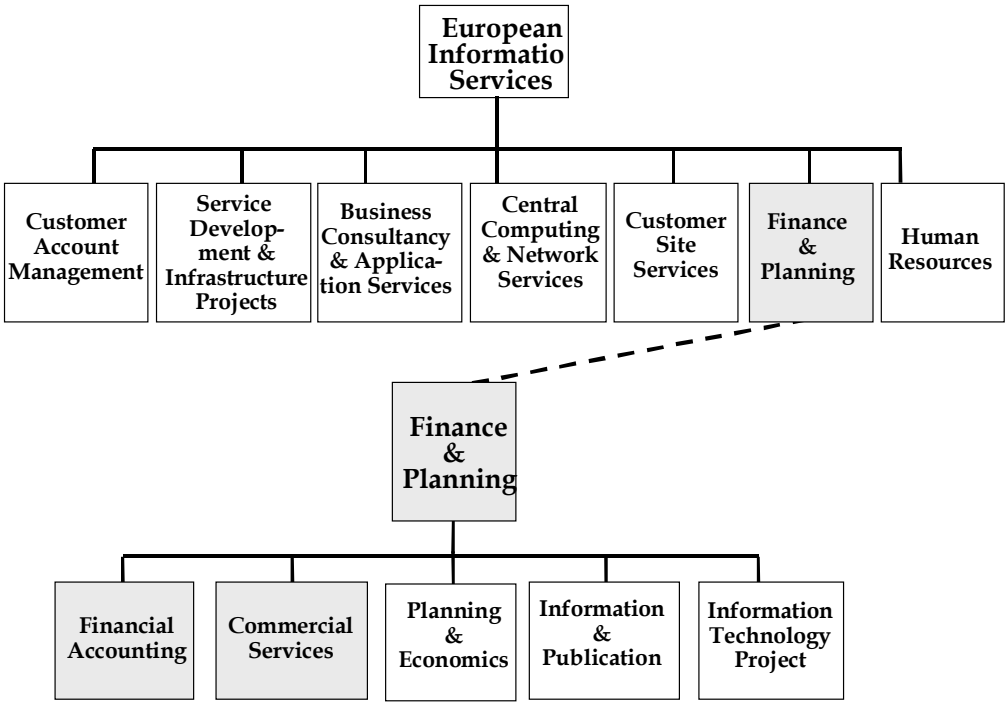


Exhibit 4.19: Simplified organizational structure of EIS

[5] At the organization's request, the company name has been changed.

The mission of Finance & Planning (F&P) was: "To deliver information and services to European IT Services' companies, at agreed levels of quality and cost". The FA department supported this mission by the strategy: "Providing financial accounting support in a professional manner such that the company's internal and external obligations are met in the most cost effective manner, the control framework of the financial accounting processes is in place and operating, and internal and external customers recognize and value financial accounting's contribution to the businesses." The CS department supported this mission by the following strategies: "Procure goods and services at optimal levels of quality and cost by negotiating in joint teams of technical (from the unit departments) and commercial staff (commercial services) in order to obtain the optimal balance in 'the best technical solution for the best commercial arrangement' considering the 'total cost of ownership'; obtaining maximum economy of scales by applying master contracts; employing quality staff in the CS department, consisting of negotiators who are acknowledged specialists in (the procurement of) products and services, and supporting staff who are proactive; and communicating CS services, expertise, and results to the EIS organization."

During 1995, several projects were undertaken at EIS. The FA department conducted a project to strengthen the financial controls that were in place at the EIS organization. The CS department developed a new procurement business model. Following these projects, both departments started with the development of CSFs and KPIs.
The project kicked off with formulating the strategy and mapping out the most important (crucial) business activities of each department. Then, for the strategy and for each crucial business activity, one CSF was selected so that all important strategic and operational activities in the department are covered. After that, one or two KPIs were selected for each CSF. In this way, the total number of indicators was kept within limits. For each KPI, one so-called KPI custodian was appointed. Then, it was determined whether or not there was a relationship between the KPIs in the set. After all, the performance on one KPI can influence the performance on another KPI – positively or negatively. Finally, a target was set for each KPI. Exhibit 4.20 gives some examples of the developed CSFs and KPIs.

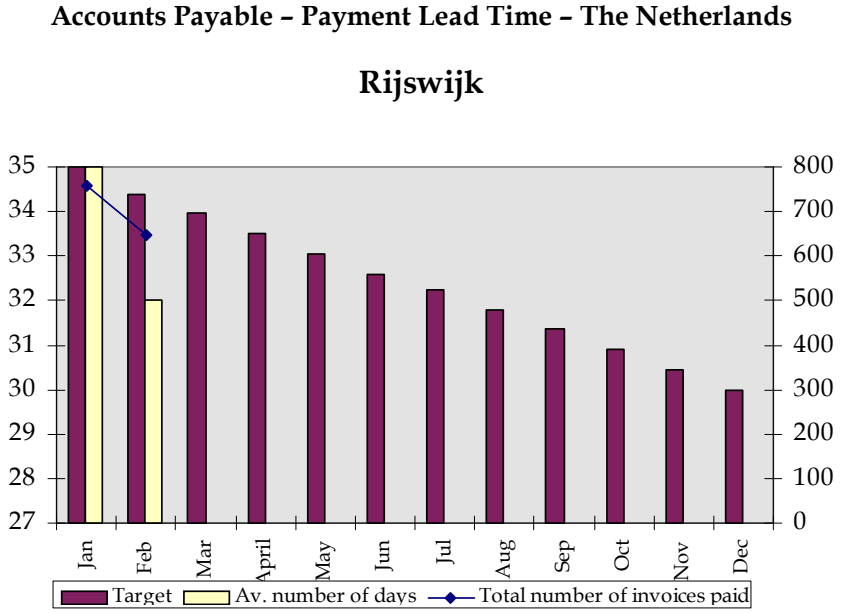
Critical Success Factor	**Key Performance Indicator**	**Definition**
Financial Accounting Department		
Professionalism	Functional Training	The number of relevant courses followed versus the number of employees.
Timetable compliance	Variation in days on timetable	Number of days overdue or number of days underdue compared with the timetable for closing the general ledger and generating cost reports per month.
Invoices paid in agreed terms	Invoices paid on time	Number of invoices paid in the agreed time frame divided by the total number of invoices paid per month.
Payments received in agreed terms	Overdue outstanding balance	Overdue outstanding balance per month divided by the total amount of invoices issued in the previous three months.

Critical Success Factor	Key Performance Indicator	Definition
Project capacity	Time spent on specific projects	Total time of staff spent on specific improvement/cost reduction projects divided by the total budgeted work time of staff.
Control framework compliance	Solved audit points	Total number of audit points solved in the reporting period versus the total number of audit points that are open and due year-to-date per quarter.
Efficient invoice process	Processing time for an invoice	The total work time needed (in hours) for processing all invoices registered per month divided by the total number of invoices paid per month.
Timeliness of invoice payment	Payment lead time	Average number of days between invoice receipt date and date of payment versus the total number of invoices paid per month.
Quality of billing	Credit notes	Total amount of credit notes per month divided by the total amount of proceeds of the previous month and the reporting month.
Informed customer	Inquiries about invoices	Number of inquiries about invoices per month divided by the total number of charging records of the two months previous to the reporting month.
Up-to-date asset registers	Book-to-physical	Number of mismatches in the asset registers per quarter.
Quality of reports	Number of complaints about reports	Number of formal complaints by management about reports per quarter.
Commercial Services Department		
Joint technical/ Commercial teams	Joint technical/ commercial teams involved in commercial issues	Number of commercial issues handled by joint technical and commercial teams divided by the total number of commercial issues.
Technical/Commercial balance	Clients' satisfaction on commercial issue outcomes	Sum of the ratings from clients on commercial issue outcomes divided by the total number of commercial issues for which a rating was given.
Master contract	Master contract coverage [numbers]	Number of master contracts concluded since January 1 in the current year divided by the total number of contracts concluded since January 1 this current year.
Master contract	Master contract coverage [value]	Total spending under master contracts since January 1 in the current year, divided by the total EIS procurement spending since January 1 this current year.
Quality personnel	Training days	Total number of training days attended by CS staff since January 1 in the current year divided by the total number of training days planned for Commercial Services since January 1 this current year.

Critical Success Factor	Key Performance Indicator	Definition
Proactiveness	Commercial opportunities	Average number of commercial opportunities recognized and offered to the client, over all the departments.
Timeliness	Request for service response time (I)	Average throughput time from raising a request to the last approval by Commercial Services.
Timeliness	Request for service response time (II)	Average throughput time from the approval to the closing date of the request.
Up-to-date contracts	Deadlines met	Number of contracts for which the expiration date or review date has exceeded with action (renewal or termination) taken, divided by the total number of expired or reviewed contracts.
Reliability of the database	Complaints about the database	Total number of formal complaints about the content of the database.
Standardization	Standardization initiatives	Number of standardization initiatives started or successfully implemented since January 1 in the current year.

Exhibit 4.20: Examples of CSFs and KPIs for the FA and CS departments

The time needed for the implementation of the performance management system was three months, of which 50 working days were spent on the development of the CSFs and the KPIs. The activities were mainly performed by a project team of outside consultants, whereby discussions frequently took place with the head of the FA unit, department heads, and employees. After the project, both the FA and the CS department started to use respectively a finance and a commercial services (procurement) CSF/KPI report (Exhibit 4.21).



Date: 31–3–'97 Period: February

KPI 9	By	Target	Value	Analysis	Action
Average number of days between invoice receipt date and date of payment versus the total number of invoices paid per month for every site.	Netherlands	35 days	32 days 647 invoices	January had 756 invoices.	
	U.K. 1	35 days	Registered 773 Authorized 834	After new system, data for Ltd. should also become available.	
	Scotland	35 days	Registered 392 Authorized 387		
	U.K. 2	35 days	Registered 687 Authorized 613		

Exhibit 4.21: Example of KPI report for the FA department

4.4.2 Description of EIS Case Study

During the case study research, interviews were held with five individuals (Exhibit 4.22). The contact person at EIS was a senior consultant from an outside consultancy, who had been actively involved in the development of the CSFs and KPIs at EIS. Moreover, she was still actively involved at other projects at the organization.

Position of Interviewee	Duration of Interview (in Minutes)
F&P manager	75
FA department head	75
CS department head	75
FA staff member	75
FA staff member	75
Contact person	90

Exhibit 4.22: Overview of EIS interviewees

An extended document research was performed, consisting of reporting timetable, project working documents, example reports, follow-up action plans, and the starting set of CSFs and KPIs. No questionnaire was sent out at this case study organization, because the head of FA only allowed interviews with the heads of the FA and the CS departments. This was because, according to him, the employees of both departments had too much on their minds at that time to be able to participate in the research.

On the basis of the information collected during the interviews and in the document research, the behavioral factors were scored by the researchers, separately for each of the two departments for the three stages: (1) starting, (2) development, and (3) use. The criteria for regular use were also scored. These scores were discussed with the F&P manager and both department heads (CS and FA). In this section, a summary is given of the results of EIS. Appendix G gives the detailed results and the document with the final scoring for EIS.

Starting Stage

Managers from the FA and the CS departments had a positive attitude at the start of the CSF/KPI project. This positive attitude was caused by the fact that managers considered the use of CSFs and KPIs to be a logical next step after the financial control project. With the implementation of CSFs and KPIs, managers expected to be better able to monitor the implementation and use of the controls and if efficiency and effectiveness gains were obtained. As the FA department head elaborated: "KPIs are useful because you can easily see what is going on inside your department. People inside the department have the tendency to 'work in circles'. They sometimes do not see where they are going. The use of KPIs gives them a more structured approach and a clear direction to where they are going." Apart from that, the managers all had positive previous experiences with performance measurement. This had a positive influence on the attitude and image forming toward the CSF/KPI project. The managers were also actively involved in the decision-making process of the CSF/KPI project. However, they could not spend enough time on the development of the CSFs and KPIs due to the busy, turbulent working situation at EIS at that time, ongoing projects, and the yearly close that took place simultaneously during the project.
The researchers concluded that the final score for the starting stage at EIS was a +, which indicates that most of the behavioral factors for this stage were satisfied.

Development Stage

Managers were actively involved in the development of the CSFs and KPIs through participating in workshops and project meetings. The promoter of the CSF/KPI project consciously delegated the project tasks to the responsible managers inside the departments. The involvement of these managers had a positive influence on their understanding of the KPI definitions and the new management report. In addition, the managers accepted responsibilities for the KPI results because they recognized a clear relationship between the (crucial) business activities, their activities and the KPI results. However, the managers from the CS department were less involved in the project because their department head gave them less leeway during the development stage. He had his doubts: "We tend to measure for measurement sake, instead of measuring for managing sake." This resulted in a KPI set that did not completely represent managers responsibility areas.
The researchers concluded that the final score for the development stage at EIS was a +, which indicates that most of the behavioral factors for this stage were satisfied.

Use Stage

Managers from the FA department had a positive attitude toward the use of the performance management system because they viewed the KPIs as important for their own functioning, especially in managing their staff. Their indicators matched their responsibility areas well. The managers frequently made analyses that, however, hardly led to actions being reported in the management report. The FA indicator set was regularly evaluated and updated. The new CSF/KPI report was a real living instrument in the FA department.

Managers in the CS department, and especially the head of the department, seemed to have made less use of the performance management system: the CS KPIs were not actively discussed and evaluated. The number of indicators used decreased significantly in relation to the starting set of KPIs. The KPI set was not regularly evaluated or updated, making the indicators decreasingly relevant for CS managers. Since June 1996, only four procurement KPIs were reported. The department head saw targets as speculative and therefore no actions were taken on lagging actuals. CS managers saw the KPI set as a snapshot at a point in time. The F&P manager commented: "KPIs should be a tool that is important to run your business, but it is not seen that way at CS. The FA department head manages the people in a straight-forward manner and she introduced the KPIs when this was deemed necessary. The CS department head is not as performance-focused in all aspects. For example, he sets targets for the KPIs but then does not monitor the results. In his department, people were less enthusiastic and showed less commitment. With hindsight, I should have been more involved during the development of KPIs at CS and also in embedding these into the department."
In general, the CSF/KPI report got less priority in both departments due to the rather non-committal manner in which the report was used for managing the departments. Managers were hardly held accountable by the F&P manager for their KPI results, and no linkage existed between the reward system and the results of the KPIs. Managers often said they had no time for reporting or taking actions, and frequently these excuses were simply accepted. If a turbulent working situation existed, the people tended to see the CSF/KPI report not as a number one priority. If managers were occasionally held accountable for their results, it was sometimes felt as a threat: the researchers felt that a blaming culture existed at EIS, as an FA staff member agreed: "There exists a real blame culture within EIS. Managers specifically look at how good or bad you perform, they do not look at the causes for this performance."
The researchers concluded that the final score for the use stage at EIS was a + for the FA department, which indicates that the behavioral factors for this stage were satisfied in this department, and a – for the CS department, which indicates that the behavioral factors for this stage were not satisfied in this department.

4.4.3 Results of EIS Case Study

Exhibit 4.23 gives the scores as allocated by the researchers for the behavioral factors in the starting, development and, use stages. For each stage the final score, as allocated by the researchers, is also given.

Behavioral Factor	Analysis	FA	CS
Starting Stage			
Managers accept the need for performance management.	There was a positive attitude at the start of the CSF/KPI project. Managers wanted to employ the performance indicators to monitor where the organization stood (especially after the financial control project) and where the organization wanted to go with regard to external and internal performance.	+	+
Managers have earlier (positive) experiences with performance management.	All managers had positive previous experiences with performance measurement, which created a positive attitude at the start of the CSF/KPI project.	+	+
Managers agree on the starting time.	There was a clear and unambiguous starting time of the project. Managers saw the CSF/KPI project as a logical next step after the control project.	+	+
Managers have been involved in decision making about the project starting time.	The managers were closely involved in the decision-making process.	+	+
Managers work in a stable, relatively tranquil environment.	Managers were, in their opinion, not able to spend enough time on the CSF/KPI project. The project team had to perform most of the activities. This was caused because the organization at that time had to install a number of changes in the business processes (for example the still ongoing control project and the procurement model project).	0	0
Final Score Starting Stage		**+**	**+**
Development Stage			
Managers have an active role during the development stage of the performance management system project.	Managers were highly involved in the discussions and workshops about the CSFs and KPIs to be developed.	+	+
Managers are informed about the status of the performance management system project.	Managers were frequently informed about the project status by means of workshops and meetings.	+	+
Managers understand the meaning of KPIs.	The managers were familiar with the short definitions in the management report, but were not always familiar with the long definitions in a definition document.	+	+
Managers are involved in defining KPIs.	Managers were highly involved in the development of the KPI definitions.	+	+
Managers have insight into the relationship between business processes and CSFs/KPIs.	KPIs were defined for the (crucial) business activities of the departments. There was a clear relationship between KPIs and the (crucial) business activities of the departments.	+	+
Managers are involved in setting KPI targets.	For each performance indicator a target was set in the management report. Managers were actively involved in the determination of targets.	+	+
Managers are involved in making the CSF/KPI/BSC reporting layout.	Managers were actively involved in the setup of the content and layout of the management report.	+	+

Behavioral Factor	Analysis	FA	CS
Managers understand the CSF/KPI/BSC reporting.	The finance and procurement reports were comprehensible to the managers. Colors, graphics, tables, and standard formats characterized the management report.	+	+
Managers can influence the KPIs assigned to them.	Managers felt responsible for the performance indicators that referred to the department and that they could influence themselves.	+	+
Managers accept the promoter.	Managers accepted the F&P manager as promoter of the project.	+	+
Managers find the performance management system relevant because it has a clear internal control purpose.	The management report was developed from an internal point of view.	+	+
Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	The management report was developed from a internal point of view. The service managers of EIS and the IT managers of the customers of EIS did not have influence on the content of the management report.	+	+
Managers use the CSFs/KPIs/BSC that match their responsibility areas.	For the FA and CS departments, different sets of CSFs and KPIs were developed. In general, the finance indicators gave a clear picture of the responsibility area of the manager. The procurement indicators were less successful in giving this view.	+	–
Managers have insight into the relationship between strategy and CSFs/KPIs.	CSFs and KPIs were, as described in the definition document, derived from the strategy of EIS. However, managers did not make use of this working document and therefore the relationship between the CSFs and KPIs and the strategy was hardly recognized. Apart form that, there was no real clear relationship described in the definition document.	–	–
Managers see the promoter spends enough time on the performance management system implementation.	The sponsor spent little time on the CSF/KPI project: about 3 days of the total of 50 working days on the CSF/KPI project. This was done on purpose as the sponsor was of the opinion that the managers themselves should spent most of the time.	–	–
Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	There was insufficient data to be able to judge this.	NA	NA
Managers' KPI sets are aligned with their responsibility areas.	There was insufficient data to be able to judge this.	NA	NA
Managers are actively communicating about the performance management system project.	There was insufficient data to be able to judge this.	NA	NA
Final Score Development Stage		**+**	**+**

Behavioral Factor	Analysis	FA	CS
Use Stage			
Managers do not experience CSFs/KPIs/BSC as threatening.	The managers did not experience the results on KPIs as a threat.	+	+
Managers realize the importance of CSFs/KPIs/BSC to their performance.	The use of CSFs and KPIs turned out to be important for the control of the business processes and for a structured way of showing where improvements were needed.	+	+
Managers have sole responsibility for a KPI.	For each KPI, a single manager was responsible, although the results of certain indicators could be influenced by more than one person.	+	+
Managers can use their CSFs/KPIs/BSC for managing their employees.	FA managers, and to a lesser degree CS managers, saw as advantages of performance measurement: the use of KPIs as a tool for structuring discussions; and to get a clear picture of what happened inside the department and where the department wanted to go.	+	0
Managers' results on CSFs/KPIs/BSC are openly communicated.	The openness about the results of performance indicators was high. Some results of performance indicators were placed on a bulletin board in the hall. However, the CS department head communicated less information than the FA department head.	+	0
Managers agree on changes in the CSF/KPI set.	Inside the unit, consensus existed about changes with regard to the FA indicators. No changes took place in the CS indicators because these were hardly looked at by department head and managers.	+	–
Managers trust the performance information.	In general, the FA management report was considered to be reliable. Few discussions about the reliability took place. The KPI report of CS was hardly used and only limited attention was paid to the reliability.	+	–
Managers are involved in making analyses.	FA managers frequently made analyses. These analyses were put in the FA management report. CS managers did not make analyses.	+	–
Managers clearly see the promoter using the performance management system.	The sponsor talked about the indicators with the FA managers, but it was not clear what the quality of these conversations was. The sponsor could not speak to the CS managers about the KPIs because they hardly used their KPIs.	+	–
Managers have enough time to work with their CSFs/KPIs/BSC.	Managers seemed to have not enough time to do their daily activities. As a result, and also because some KPIs were hardly used for the managing of daily activities in both departments, the time spent on KPIs was limited.	0	0
Managers' frames of reference contain similar KPIs.	For some KPIs of FA the results were compared with other EIS sites. This was difficult because the procedures and systems of sites differed. No structured comparison took place for the indicators of CS.	0	–
Managers trust good-quality analyses.	The analysis for FA was described at a high level. In general, these analyses were open, but not very specific. There were no analyses made at CS.	0	–

Behavioral Factor	Analysis	FA	CS
Managers are stimulated to improve their performance.	At EIS, managers rather quickly blamed others for their mistakes (blame culture). This was especially visible in the CS department.	0	–
Managers' activities are supported by KPIs.	FA managers formulated actions for their indicators, but these actions were not documented in the management report. CS managers hardly formulated actions for their indicators.	0	–
Managers have insight into the relationship between KPIs and financial results.	The actions and financial consequences of actions were not mentioned in the management report. Consequently, there was no insight into the relationship between KPIs and financial results.	–	–
Managers have insight into the relationship between cause and effect.	In both departments, no explicit cause–and–effect relationships were identified.	–	–
Managers are involved in forecasting.	Forecasts for KPIs were infrequently made.	–	–
Managers use the performance management system regularly during the planning and control cycle.	Managers were not on a regular basis held accountable for the results of the KPIs. The use of KPIs seemed rather noncommittal.	–	–
Managers' use of the performance management system is stimulated by the reward structure.	The managers were assessed on their tasks and goals but not on the results of their KPIs. There was no link between KPI results and the reward structure.	–	–
Managers and their controlling systems have a mutual trust.	There was insufficient data to be able to judge this.	NA	NA
Managers do not get discouraged by the collection of performance data.	There was insufficient data to be able to judge this.	NA	NA
Managers find the performance management system relevant due to regular evaluations.	There was insufficient data to be able to judge this.	NA	NA
Managers trust good-quality forecasts.	There was insufficient data to be able to judge this.	NA	NA
Final Score Use Stage		+	–

Exhibit 4.23: Behavioral factors scores for the starting, development, and use stages at EIS

Criteria for Regular Use

Exhibit 4.24 gives the scores allocated by the researchers for the criteria for regular use, which indicate whether the implementation of the CSFs and KPIs can be considered to be successful.

Criterion for Regular Use	Analysis	FA	CS
CSFs, KPI, and BSC incorporated in the regular management reporting	The CSFs and KPIs were an integral part of the regular management reporting. However, the CS report only contained a limited number of KPIs.	+	0
Increased performance management system use by managers	The use of indicators in the FA department increased in time. The use of the indicators in the CS department decreased in time.	+	–
Regular communication about KPI results	Communication between the F&P manager and the FA department about its indicators regularly took place. The communication with the CS department took place infrequently and ad hoc.	+	–
Plans for follow-up projects	There were no formal plans for the continuation of the CSF/KPI project.	–	–
Difference in attitude toward performance management, between project start and currently	In both departments there was initially a positive attitude toward performance management. In FA the managers still were positive, however, in CS the initial enthusiasm had considerably decreased.	+	0
Organizational results improved through performance management system use	It seemed the performance of the unit stayed constant.	0	0
Organizational results improved, objectively	It seemed the results of FA were improving, and those of CS were decreasing. It was not clear whether this was through performance management system use or through other factors (like personnel problems at CS).	0	–
Final Score Criteria for Regular Use		**+**	**–**

Exhibit 4.24: Criteria for regular use scores, for EIS

The use of the CSFs and KPIs in the F&P unit could not be called an unqualified success: a clear difference in use of the indicators between departments FA and CS was found. In the FA department, the use of and the communication about the KPI report was frequent and increased in time. Changes in the CSF/KPI set were regularly made (changes in definitions and targets, and adding and skipping of indicators). There was one point of attention, however. The FA department head, who recognized the importance of the indicators and was continuously busy with reviewing and updating the CSF/KPI set, would leave EIS in June 1997. Consequently, a real danger existed in that the CSF/KPI report of FA could receive less attention in the future.

In the CS department, the use of and the communication about the KPI report was irregular and clearly decreased after the initial introduction. The procurement report was, during the time of the case study research, generated only on an ad hoc basis. Of the 17 procurement indicators that were originally developed, only four indicators were still in use. Recently, the department experienced some organizational problems, which resulted in the CSF/KPI report's receiving even less attention. The head of CS used the report not (anymore) as a tool for control but more as an information tool for the accountability toward his customers. He could explain some of the difficulties customers experienced with CS with information from the KPI report.

A general point of attention was that the finance and the procurement management reports were not an integral part of the planning and control cycle in the unit. The managers from the unit were not really held accountable for the results of the KPIs. In addition to this, the management report was hardly used for formulating and undertaking actions by both the FA and CS heads, and the F&P manager. The danger existed in that the management report would increasingly be used for, as one manager put it, "measuring to know, instead of measuring to manage".

The researchers concluded that the final score for the criteria for regular use at EIS was a + for the FA department, which indicates that the implementation of the CSFs and KPIs was a success in that department. The final score for the CS department was a – in the opinion of the researchers, which indicates that the implementation of the CSFs and KPIs was a failure in that department. This analysis was discussed with the F&P manager, who shared the researchers' view. According to him, the performance management system was hardly used in the CS department, while at the same time the FA department used it extensively.

4.5 ANALYSIS OF CASE STUDIES

In this section, the two research questions are investigated by applying pattern matching, which allows patterns to be discerned between the various scores of the cases. These patterns tell us which behavioral factors, theoretically predicted to be important, coincide with the criteria for regular use. Pattern matching is applied to identify patterns between the scores on the individual behavioral factors and the criteria for regular use, and between the end scores for the three stages and the scores for the criteria for regular use. The assumption in pattern matching is that the behavioral factors are independent. This is why the factors have not been weighed. For pattern matching, a complete match between the scores of all cases gives a complete coincidence, indicating that these behavioral factors seem to have a general similarity with a successful implementation and use of a performance management system. These behavioral factors can consequently be considered to be essential. A match between three or two scores gives a partial coincidence, which means that these behavioral factors have a partial similarity with the criteria for regular use. These behavioral factors may be important to the successful implementation and use of a performance management system. Finally, a match between one or none of the scores indicates there is no coincidence, which means that these behavioral factors may not be important to the successful implementation and use of a performance management system.

As an example, some of the behavioral factors in the use stage are examined. The scores for four factors (U1, U9, U13, and U15) are compared with the scores for the criteria for regular use. These scores have been transferred into Exhibit 4.25 from the four case studies as described in Sections 4.2 through 4.4..[6] If factor U9 is examined, a complete match of the four scores is found (score 0 + – + of U9 corresponds with the final score 0 + – + of the criteria for regular use). Behavioral factors U13 and U15 have three respectively two matches with the final score of the criteria for regular use, and therefore partially coincide. Behavioral factor U1 has only one coinciding score and is therefore deemed to be of no importance to the successful implementation and use of a performance management system.

No.	Behavioral Factor	AZU	EIS FA	EIS CS	Kad	Importance
U1	Managers have insight into the relationship between KPIs and financial results.	–	–	–	0	No
U9	Managers are involved in making analyses.	0	+	–	+	Yes
U13	Managers realize the importance of CSFs/KPIs/BSC to their performances.	0	+	+	+	Partial
U15	Managers can use their CSFs/KPIs/BSC for managing their employees.	+	+	0	+	Partial
Final Score Criteria for Regular Use		**0**	**+**	**–**	**+**	

Exhibit 4.25: Example of pattern matching

4.5.1 Pattern Matching of the Behavioral Factors

To answer the first research question (Which behavioral factors – listed in Exhibit 3.12 – contribute to the successful implementation and use of a performance management system?), pattern matching is applied to identify patterns between the scores on the individual behavioral factors found in all the cases and all the scores for the criteria for regular use. Exhibit 4.26 gives the results of this pattern matching. Area A lists the behavioral factors. Area B gives the scores from the case studies. Area C lists the results of the pattern matching between the behavioral factors and the final score ("Imp" column, i.e., Important) and the subscores (columns 1–7) of the criteria for regular use. The detailed scores are given in the second table. Complete and partial matches between the behavioral factors and the criteria have been given a dark shade. A complete match is also denoted with a C. In area B the behavioral factor(s) that prevented a complete matching with the final score for the criteria for regular use (denoted by a dark shade in the column Imp.) has been given a light shade.

[6] For the analysis, the EIS case has been separated into two cases: EIS-FA and EIS-CS, giving a total of four case studies.

	A.	B.				C. Criterion for Regular Use							
No.	**Behavioral Factor**	**AZU**	**EIS FA**	**EIS CS**	**Kad**	**Imp**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	Starting Stage												
S1	Managers accept the need for performance management.	+	+	+	+								
S2	Managers agree on the starting time.	0	+	+	+								
S3	Managers have been involved in decision making about the project starting time.	–	+	+	–								
S4	Managers have earlier (positive) experiences with performance management.	+	+	+	+								
S5	Managers work in a stable, relatively tranquil environment.	–	0	0	0								
	Development Stage												
D1	Managers have an active role during the development stage of the performance management system project.	–	+	+	–								
D2	Managers are informed about the status of the performance management system project.	NA	+	+	–								
D3	Managers are actively communicating about the performance management system project.	NA	+	+	–								
D4	Managers understand the meaning of KPIs.	0	+	+	NA								
D5	Managers are involved in defining KPIs.	–	+	+	–								
D6	Managers have insight into the relationship between strategy and CSFs/KPIs.	–	–	–	0								
D7	Managers have insight into the relationship between business processes and CSFs/KPIs.	0	+	+	0								
D8	Managers are involved in setting KPI targets.	–	+	+	0								
D9	Managers' KPI sets are aligned with their responsibility areas.	–	+	–	0								

A.		B.				C. Criterion for Regular Use							
No.	**Behavioral Factor**	**AZU**	**EIS FA**	**EIS CS**	**Kad**	**Imp**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
D10	Managers are involved in making the CSF/KPI/BSC reporting layout.	–	+	+	–								
D11	Managers understand the CSF/KPI/BSC reporting.	+	+	+	0								
D12	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	NA	NA	NA	0								
D13	Managers can influence the KPIs assigned to them.	0	+	+	NA								
D14	Managers accept the promoter.	–	+	+	0								
D15	Managers see the promoter spends enough time on the performance management system implementation.	NA	–	–	0								
D16	Managers find the performance management system relevant because it has a clear internal control purpose.	+	+	+	+								
D17	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	NA	+	+	+								
	Use Stage												
U1	Managers have insight into the relationship between KPIs and financial results.	–	–	–	0								
U2	Managers do not get discouraged by the collection of performance data.	+	NA	NA	+								
U3	Managers have insight into the relationship between cause and effect.	–	–	–	–								
U4	Managers are involved in forecasting.	–	–	–	–								
U5	Managers trust good-quality forecasts.	NA	NA	NA	NA								
U6	Managers' activities are supported by KPIs.	NA	0	–	0								

A.		B.				C. Criterion for Regular Use							
No.	**Behavioral Factor**	**AZU**	**EIS FA**	**EIS CS**	**Kad**	**Imp**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
U7	Managers' frames of reference contain similar KPIs.	–	0	–	+								
U8	Managers trust the performance information.	0	+	–	0								
U9	Managers are involved in making analyses.	0	+	–	+	C			C			C	
U10	Managers trust good-quality analyses.	0	0	–	0								
U11	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	–	NA	NA	–								
U12	Managers have enough time to work with their CSFs/KPIs/BSC.	+	0	0	+								
U13	Managers realize the importance of CSFs/KPIs/BSC to their performance.	0	+	+	+								
U14	Managers do not experience CSFs/KPIs/BSC as threatening.	+	+	+	+								
U15	Managers can use their CSFs/KPIs/BSC for managing their employees.	+	+	0	+								C
U16	Managers have sole responsibility for a KPI.	–	+	+	0								
U17	Managers clearly see the promoter using the performance management system.	–	+	–	0								
U18	Managers and their controlling systems have a mutual trust.	NA	NA	NA	+								
U19	Managers find the performance management system relevant due to regular evaluations.	–	NA	NA	–								
U20	Managers use the performance management system regularly during the planning and control cycle.	0	NA	NA	–								
U21	Managers agree on changes in the CSF/KPI set.	–	+	–	–								

A.		B.				C. Criterion for Regular Use							
No.	**Behavioral Factor**	**AZU**	**EIS FA**	**EIS CS**	**Kad**	**Imp**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
U22	Managers are stimulated to improve their performance.	NA	0	–	+								
U23	Managers' results on CSFs/KPIs/BSC are openly communicated.	+	+	0	+								C
U24	Managers' use of the performance management system is stimulated by the reward structure.	–	–	–	–								
Number of Shaded Areas:		*9*	*2*	*11*	*5*	*18*	*6*	*6*	*18*	*12*	*15*	*17*	*12*

Criterion for Regular Use	**AZU**	**EIS-FA**	**EIS-CA**	**Kad**
Organizational results improved through performance management system use	–	0	0	+
Organizational results improved, objectively	0	0	0	0
Increased performance management system use by managers	0	+	–	+
Plans for follow-up projects	+	–	–	0
Difference in attitude toward performance management, between project start and currently	0	+	0	+
Regular communication about KPI results	0	+	–	+
CSFs, KPI, and BSC incorporated in the regular management reporting	+	+	0	+
Final Score Criteria for Regular Use	**0**	**+**	**–**	**+**

Exhibit 4.26: Results of pattern matching between behavioral factors and criteria for regular use scores for all the case studies

Based on the results of pattern matching, the first research question (Which behavioral factors – listed in Exhibit 3.12 – contribute to the successful implementation and use of a performance management system?) can be answered in the following way: eighteen of the behavioral factors, derived from the behavioral factors in the literature, seem to be important to the successful implementation and use of a performance management system.

4.5.2 Pattern Matching of the Stages

To answer the second research question (Are behavioral factors from the starting and development stages more important to the successful implementation and use of a performance management system than those of the use stage?), pattern matching is applied to identify patterns between the end scores of the stages and the final scores of the criteria for regular use. Pattern matching is performed in a similar manner as in the previous section. If a complete or partial match is found for a particular stage, it is deemed that this stage must be exe-

cuted properly in order to obtain a regularly used performance management system. Exhibit 4.27 gives the results of pattern matching for the starting, development, and use stages.

Stage	AZU	EIS-FA	EIS-CS	Kad	Important
Starting	0	+	+	+	Partial
Development	–	+	+	0	No
Use	0	+	–	+	Yes
Final Score **Criteria for Regular Use**	**0**	**+**	**–**	**+**	

Exhibit 4.27: Final scores for all the stages and all the case studies

The scores for the use stage coincide completely with the final scores for the criteria for regular use. In other words, it seems there is a relationship between a well-executed use stage and a good final score. The scores for the starting and development stages, on the other hand, coincide partially or not at all with the scores for the criteria for regular use. This tells us that there is no relationship between how well these stages have been executed and the final score. So, even a well executed starting and/or development stage is no guarantee for a good final score, that is, a regularly used performance management system. Consequently, the result for the second research question (Are behavioral factors from the starting and development stages more important to the successful implementation and use of a performance management system than those of the use stage?) is negative.

One may wonder whether the behavioral factors of the use stage and the criteria for regular use are so much alike that finding a relationship between the two is inevitable. However, after looking more closely at both, it becomes apparent that the criteria for regular use do not also appear as behavioral factors in the use stage. This indicates that the positive relationship between the two is not caused by lack of the researchers to make a theoretical distinction between the two.

4.5.3 Discussion of Phase I Results

The results of the pattern matching indicate that there are 18 behavioral factors that coincide with the final score for the criteria for regular use. The result that 10 of these 18 factors are from the use stage matches the result found from pattern matching the stages. There, the use stage turned out to best coincide with the criteria for regular use (see Section 4.5.2). It is possible to group the 18 important behavioral factors from Exhibit 4.26 together in categories in such a way that an overview appears of the areas an organization has to pay special attention to increase the chance of implementing a new performance management system that will be regularly used (Exhibit 4.28).

Classification Scheme Part	Areas of Attention to Obtain a Regularly Used Performance Management System	Behavioral Factors
Performance management system	**Managers' understanding –** *A good understanding by managers of the nature of performance management*	D4. Managers understand the meaning of KPIs. D7. Managers have insight into the relationship between business processes and CSFs/KPIs. U7. Managers' frames of reference contain similar KPIs. U21. Managers agree on changes in the CSF/KPI set.
Controlled system	**Managers' attitude –** *A positive attitude of managers toward performance management, toward a performance management system and toward the project*	S2. Managers agree on the starting time. S4. Managers have earlier (positive) experiences with performance management. U13. Managers realize the importance of CSFs/KPIs/BSC to their performance. U14. Managers do not experience CSFs/KPIs/BSC as threatening.
Controlling system	**Performance management system alignment –** *A good match between managers' responsibilities and the performance management system*	D9. Managers' KPI sets are aligned with their responsibility areas. D13. Managers can influence the KPIs assigned to them. U9. Managers are involved in making analyses. U15. Managers can use their CSFs/KPIs/BSC for managing their employees.
Internal environment	**Organizational culture –** *An organizational culture focused on using the performance management system to improve*	U23. Managers' results on CSFs/KPIs/BSC are openly communicated. U22. Managers are stimulated to improve their performance. U8. Managers trust the performance information. U17. Managers clearly see the promoter using the performance management system.
External environment	**Performance management system focus –** *A clear focus of the performance management system on internal management and control*	D16. Managers find the performance management system relevant because it has a clear internal control purpose. D17. Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.

Exhibit 4.28: Overview of behavioral factors, important to implementation of a regularly used performance management system

It is also possible to group the least important behavioral factors together in categories in such a way that an overview appears of the areas an organization does not have to pay special attention to during the implementation of a new performance management system. For this,

the behavioral factors that do not have a single match in Exhibit 4.26 are grouped together. If a factor had two or more times N/A, it was not included in a category (Exhibit 4.29).

Classification Scheme Part	Areas of Least Attention to Obtain a Regularly Used Performance Management System	Behavioral Factors
Performance management system	**Managers' involvement –** *Direct involvement of managers in developing the new performance management system*	S3. Managers have been involved in decision making about the project starting time. D1. Managers have an active role during the development stage of the performance management system project. D2. Managers are informed about the status of the performance management system project. D3. Managers are actively communicating about the performance management system project. D5. Managers are involved in defining KPIs. D8. Managers are involved in setting KPI targets. D10. Managers are involved in making the CSF/KPI/BSC report layout. D11. Managers understand the CSF/KPI/BSC reporting.
Controlled system		-
Controlling system		D14. Managers accept the promoter. U16. Managers have sole responsibility for a KPI.
Internal environment		-
External environment		-

Exhibit 4.29: Overview of behavioral factors, least important to implementation of a regularly used performance management system

As expected, because no relationship was found between this stage and the criteria for regular use, most behavioral factors that are least important belong to the development stage (D). It seems an organization does not necessarily has to actively involve managers in the development of the KPIs and the balanced scorecard (BSC) to obtain a regularly used performance management system. This matches the observation that in many of the projects I have participated in, a special project group performed the development activities, after which the future users of the performance management system (the managers) evaluated and approved the developed KPIs and BSC.

An interesting anomaly shows up in Exhibit 4.27. While the comparable departments EIS-FA and EIS-CS have equal scores for the starting and development stages, the scores for the use stage are diametrically opposed. In Exhibit 4.26, the scores for EIS-CS prevent a complete coincidence between behavioral factor scores and criteria for regular use scores 11 times (i.e., 11 lightly shaded areas in the exhibit). How can this be explained? In both departments, a similar favorable starting situation existed. In both departments, the same approach for the development of the performance management system was used and a representative set of CSFs and KPIs was made. Only in relation to the use of the performance management system did both departments differ dramatically. This difference seemed to be caused by the attitude of the department heads toward management control and the resulting management styles they used to control their departments. The head of FA had a stricter and more structured control over the department and used the CSFs and KPIs as an extra support for getting information about the status and performance of the department. The head of CS used a looser and less structured control over the department; the head was less interested in the performance management system and regarded the CSF/KPI report as not providing enough value for this type of control.
If the AZU scores in Exhibit 4.26 are examined, it becomes apparent that nine times the score prevents a complete coincidence, which means in nine instances the score for a behavioral factor deviates from the final score (i.e., the average score for all the cases examined). This suggests that at AZU there may be additional factors that may be important to the successful implementation and use of a performance management system. A closer look into that case study reveals that the difference in frequency of performance management system use can possibly be explained by the difference in conception of the two categories of managers at AZU (medical and administrative) in regard to a performance management system. In Exhibit 4.26, more evidence that other factors may be involved can be found. In area C of this exhibit, the most darkly shaded areas can be found for regular use criteria 3 (Increased performance management system use by managers) and 6 (Regular communication about KPI results). These are both criteria that are concerned with managers regularly using a performance management system for a specific type of use (in this case, communication).

Taking all these findings together gives an indication that there may be more factors involved in play that are important to the successful implementation and use of a performance management system than discussed in this dissertation so far. Two recent studies into the behavioral aspects of performance management systems implementation and performance management systems use can shed some light on the nature of these factors. In the first study, Lipe and Salterio (2000) found that managers' cognitive limitations may prevent organizations to fully benefit from a performance management system, and that cognitive differences between managers may lead them to use the performance management system differently. If Exhibit 4.28 is examined in the light of Lipe and Salterio's findings, it is conspicuous that two of the five areas of attention could be related to the cognitive and interpersonal abilities of a manager (managers' understanding and managers' attitude). In the second study, Malina and Selto (2000) found that positive outcomes from performance management system use were mostly determined by the effectiveness by which it is used as a management control device (defined in terms of effective measurement, comprehensive performance, and weight of the measurement dimensions), while these outcomes were not attributable to its use as a communication device. Positive outcomes are generated by a better strategic alignment of employees and a better motivation, which indicates that there are causal relationships between performance management system design, management control use, managerial and employee behavior, and performance. Although Malina and Selto's finding contradicts some of the findings

displayed in Exhibit 4.26, it is still an indication that the type of performance management system use may be important for the success of that performance management system.

As the aspects of cognitive and interpersonal abilities of managers and types of performance management system use were not explicitly taken into account during phase I of this study, and because I had an inclination they could be essential in answering the research questions of this study more satisfactory, I decided to start a second study phase. In phase II, I tried to relate performance management system use and organizational performance to management styles. Macintosh (1985) notes that individual managers have distinctive ways of processing information and making decisions, which can be captured in various styles. These styles then result in different ways of utilizing accounting and information systems, so that using any particular system depends on the style of the user. Management styles are composed of the cognitive and interpersonal abilities of managers and express themselves in individual competencies and observable behaviors of managers. In this respect, a competence is a feature of an individual that has a causal relationship with effective and/or excellent behavior at performing a certain task or in a certain situation (Boyatzis and McBer, 1982; Mitrani et al., 1992; Merchant, 1998). Management styles are considered one of the important and permanent drivers of managerial behavior. Developers and users of performance management systems should take these management styles into account when they develop and implement a new performance management system. The research in phase II focused strictly on observable behavior: How do managers behave when they use a performance management system and how do managers behave when they manage (management styles). Why managers behave or do not behave in a certain way is *not* part of this research. This would require further in-depth psychological research, which lays beyond the scope of this dissertation. The objective of phase II was to find answers to two research questions:

A. *Which management styles are related to which types of performance management system use?*
B. *Do specific management styles and types of performance management system use have an effect on organizational performance?*

5 Phase II – Relationship Between Types of Performance Management System Use and Management Styles

In Chapter 4, a description was given of the case-study research performed in phase I to test the importance of various behavioral factors for the successful implementation and use of a performance management system. This chapter describes the literature study performed in phase II to identify specific management styles that managers theoretically should display to make frequent, day-to-day use of a performance management system for specific purposes. To identify which management styles have an influence on the use of a performance management system, the possible uses of a performance management system are identified first and after that the management styles that theoretically have to be present for managers to become a regular user of a performance management system are identified. The performance management system uses and management styles are operationalized in a questionnaire. Based on predictions in the literature, hypotheses are drafted about the relationships between the identified system uses and management styles, and validated, using the questionnaire at 11 organizations (Exhibit 5.1).

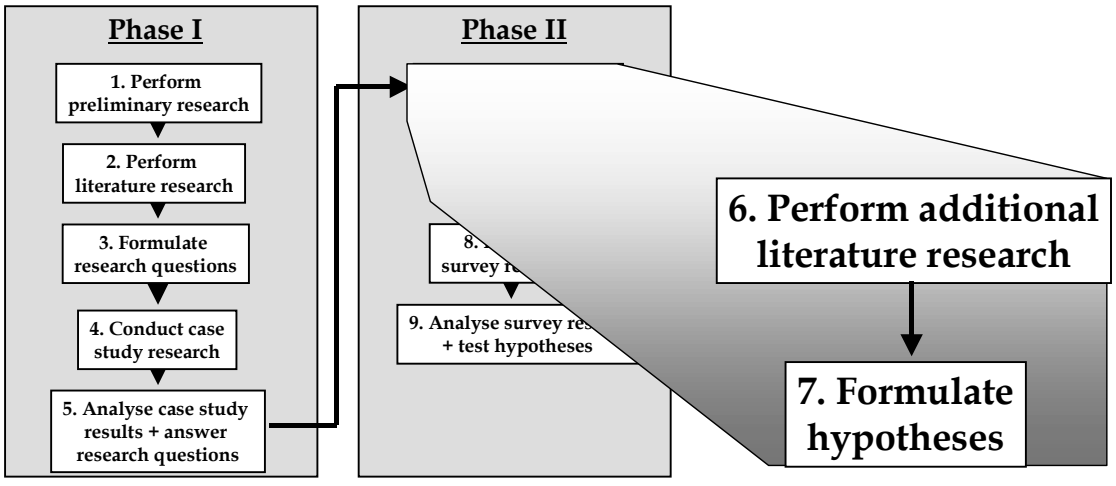


Exhibit 5.1: Research stages described in Chapter 5

5.1 TYPES OF PERFORMANCE MANAGEMENT SYSTEM USE

According to the literature described in Chapter 2, managers use a performance management system that includes critical success factors (CSFs), key performance indicators (KPIs), and the balanced scorecard (BSC) to obtain better quality information, timelier information, better

support for their activities, better communication, and an aligned culture. To determine if managers are indeed using the performance management system in their organization for these purposes, a questionnaire that measures performance management system use is required. In the field of management information systems (MIS), much research has been done into the use of information systems and the choice of suitable variables to measure it. Due to the similarity between a performance management system and an MIS in general (Gelderman, 2000), an MIS questionnaire was used to measure the use of a performance management system. To this end, the "measures of system use" questionnaire of Doll and Torkzadeh (1998) was selected because this questionnaire seemed to fit well with the behavioral patterns described in the previous chapters. Doll and Torkzadeh measure the use of an MIS along several dimensions of system use of an MIS. System use is defined as the various applications for which an MIS can be used. An MIS is defined as a system in an organization that uses information technology to provide information and communication services (Hirschhorn and Farduhar, 1985). Doll and Torkzadeh's questionnaire does not investigate how often or how long an MIS is used by respondents. Rather, the questionnaire asks respondents for which purpose(s) they use an MIS. Each specific purpose of MIS use matches a dimension of system use. An example of such a purpose is: "I use the MIS to help me explain my decisions". In total, the Doll and Torkzadeh questionnaire contains 30 purposes, which are categorized in three dimensions of system use (Exhibit 5.2).

System Use	MIS Use Factor	Definition
Decision support	Problem solving	The extent that an MIS is used to analyze cause–and–effect relationships (such as to make sense of the data)
	Decision rationalization	The extent that an MIS is used to improve the decision-making processes or explain/justify the reasons for decisions
Work integration	Horizontal integration	The extent that an MIS is used to coordinate work activities with others in one's work group
	Vertical integration	The extent that an MIS is used to plan one's own work, monitor performance, and communicate vertically to coordinate one's work with superiors and subordinates
Customer service	Customer service	The extent that an MIS is used to service internal and/or external customers

Exhibit 5.2: System use and MIS use factors, according to Doll and Torkzadeh (1998)

A performance management system can be regarded as a type of MIS because it is an integral part of the planning and control cycle of an organization and provides the manager with information about this cycle. Comparison between the system use given in Exhibit 5.2 and the performance management system use mentioned at the beginning of this section shows that there is a correspondence between the two. For decision support, better quality information and timelier information is needed, which can be provided by a performance management system. Work integration results in better support of management and in an aligned culture. Finally, to improve customer service, better communication is needed, which can be supported by a performance management system. This correspondence increases the confidence in assuming that the Doll and Torkzadeh questionnaire can be applied to measure the various

types of use a manager actually makes of a performance management system. This assumption has to be verified before testing the hypotheses. To this end, the questionnaire has been adapted to fit the research into the use of a performance management system.

	Decision Rationalization
R1	I use the performance management system to help me explain my decisions.
R2	I use the performance management system to help me justify my decisions.
R3	I use the performance management system to help me make explicit the reasons for my decisions.
R6	I use the performance management system to improve the effectiveness and efficiency of the decision process.
R7	I use the performance management system to make the decision process more rational.
	Problem Solving
P1	I use the performance management system to decide how best to approach a problem.
P4	I use the performance management system to check my thinking against the data.
P5	I use the performance management system to make sense of the data.
P6	I use the performance management system to analyze why problems occur.
	Horizontal Integration
H1	I use the performance management system to communicate with other people in my work group.
H2	My work group and I use the performance management system to coordinate our activities.
H3	I use the performance management system to coordinate activities with others in my work group.
	Vertical Integration
V2	I use the performance management system to monitor my own performance.
V3	I use the performance management system to plan my work.
V4	I use the performance management system to communicate with people who report to me.
V5	I use the performance management system to communicate with people to whom I report.
V8	I use the performance management system to get feedback on job performance.
	Customer Service
C1	I use the performance management system to deal more strategically with internal and/or external customers.
C2	I use the performance management system to serve internal and/or external customers.
C3	I use the performance management system to improve the quality of customer service.
C4	I use the performance management system to more creatively serve customers.
C5	I use the performance management system to exchange information with internal and/or external customers.

Exhibit 5.3: Questionnaire on measures of performance management system use, adapted from Doll-Torkzadeh [7]

[7] Some numbers are missing because the original Doll questionnaire is longer than this adapted questionnaire. Compared to the original questionnaire, the measures of use P2, P3, R4, R5, H4, V1, V6, and V7 were removed. For each performance management system use, at least three components were present.

Before sending out the adapted questionnaire to the case study companies, it was put before three colleagues of Andersen (one expert in the performance management system field and two general consultants) and two university researchers (of Free University Amsterdam and City University Business School London). They were asked whether the questions were applicable for a performance management system containing CSFs, KPIs , and the BSC, whether the questions were intelligible, and whether questions were overlapping. This resulted in further adaptation, by excluding 8 of the 30 measures of use (Gelderman, 2000). Exhibit 5.3 lists for each performance management system use (e.g. decision rationalization) the related measures of use (such as "I use the performance management system to help me explain my decisions").

5.2 MANAGEMENT STYLES IMPORTANT TO PERFORMANCE MANAGEMENT SYSTEM USE

To determine whether managers dispose of the management styles that are required for frequent, day-to-day use of a performance management system, the researchers searched for a questionnaire that investigated these styles. However, because no suitable questionnaire could be found, a questionnaire was constructed based on the theoretical management styles and related behaviors found in the literature.

5.2.1 Thinking

If a person is capable of analytical thinking, he or she has the ability to identify cause–and–effect chains and relationships. He or she can understand a certain situation and subdivide this situation into various elements, and identify the causes and the effects step by step. Analytical thinking also means structuring the various aspects of a problem or situation, making comparisons systematically of these aspects, setting priorities on a rational basis, and identifying the causes of successive events, causal and if–then relationships (Muller, 1970; Jansen and De Jongh, 1997; Jansen and Weisfelt, 1999). Managers behave in an analytical manner if they are able to: (1) use logical, rational processes to analyze and apply information; (2) subdivide complex problems efficiently into various, workable elements; (3) put elements into a logical causal order; (4) use if–then reasoning to identify possible obstacles or to take decisions that will influence the future; and (5) identify whether an approach is useful or not.

If a person is capable of conceptual thinking, he or she has the ability to understand a situation or a problem by gaining an overall view. Conceptual thinking comprises creative, conceptual, and inductive reasoning to implement existing concepts or define new concepts (Goedmakers et al., 1994; Spencer and Spencer, 1993, Muller, 1970). Managers behave in a conceptual thinking manner if they are able to use abstract reasoning to make logical connections between different sources of information in order to gain an overall view of the problem, and translate complex information and insights into understandable, meaningful concepts.

Both analytical thinking and conceptual thinking may be important to regular use of a performance management system because these are management styles that enable managers to gain insight into factors that influence the performance of the organization, as provided by the performance management system. Having these abilities at one's disposal means being able to analyze problems, generate solutions and obtain improvements. In the planning stage

(Anthony and Govindarajan, 1995), managers determine the targets for the KPIs. They can do this properly only if they have insight into the factors that are influencing these indicators and, therefore, which targets can be reached. In the control and measurement stages, managers compare the results of KPIs with the targets, interpret variances, and look for causal relationships between the various results and KPIs. If they are able to explain unforeseen results, they can formulate actions to correct unfavorable variances and identify improvement opportunities. All these activities require analytical and conceptual management styles.

The abilities described above are in this research referred to as: *Analytical Thinking* and *Conceptual Thinking*.

5.2.2 Communication

If a person is capable of communicating effectively, he or she has the ability to interact effectively with and convey information to other people. This includes the use of a range of communication methods, such as oral, written, graphical, and nonverbal communication. These methods are used both by sender and receiver of information (Goedmakers et al., 1994; Spencer and Spencer, 1993). Managers behave in a communicative manner if they: (1) are able to listen objectively and reproduce the content of a message in their own words; (2) use different forms and styles of communication; (3) speak effectively to individuals and groups of people; and (4) express their needs, wishes, opinions, and expectations to other people while taking people's feelings into consideration.

Effective communication may be important to regular use of a performance management system. In the planning stage, managers discuss the action plans with various groups of people, and communicate the strategy, objectives and actions to employees. In the measurement stage, managers must provide regular intermediate feedback on results to employees. And finally, in the feedback stage, managers discuss with other managers various issues that show up in the management reporting and possible corrective actions for these.

The ability described above is in this research referred to as: *Communication*.

5.2.3 Cooperation

If a person is capable of cooperation, he or she has the ability to function as a member of a team in such a way that it makes execution of the team's activities easier. A team can be a group of people (a work team), a management team, or a department. This characteristic includes the genuine intention to cooperate with other people, to be part of a team, and to work together instead of individually or in competition with others (Slivinsky et al., 1999). Managers behave in a teamwork-oriented and cooperative manner if they are able to: (1) motivate other team members to work on joint objectives; (2) have insight into the strengths and weaknesses of other team members and use the strengths to further develop the team; (3) cooperate in projects; (4) share plans, information and information sources with other team members; (5) encourage a friendly, cooperative atmosphere in the team; (6) detect and use opportunities to cooperate; and (7) share successes and responsibilities with the team.

Effective teamwork and cooperation may be important to regular use of a performance management system because the system cannot function without the willingness of people to

cooperate. This willingness is closely related to the culture of an organization. To improve an organization and its processes, there has to be a culture of openness and trust. The attitude of constantly covering up problems will make the behavioral pattern of teamwork and cooperation meaningless. This will be a problem especially in the control stage, when managers have to signal and discuss problems and find solutions for these problems. Consequently, cooperation is essential to make these problems transparent in a safe environment. Teamwork and cooperation are also important in the planning and feedback stages, when employees need to be motivated to work together to achieve the targets that have been set.

The ability described above is in this research referred to as: *Teamwork & Cooperation.*

5.2.4 Flexibility

If a person is capable of being flexible, he has the ability to adapt to the circumstances and particular environments he finds himself in. This includes the ability to adapt oneself to and work in various situations and with various individuals and groups of persons. Flexibility and adaptation also include understanding and valuing different and opposing viewpoints to an issue, adjusting the chosen approach in case of changing circumstances, and adjusting or accepting changes in the organization or activities (Spencer and Spencer, 1993; Armstrong and Baron, 1998). Managers behave in a flexible and adaptive manner if they are able to: (1) adapt easily to various demands, changing priorities and fast changes; (2) are flexible in their view on issues; and (3) adapt their approach in the light of changing circumstances.

Flexibility and adaptation may be important to regular use of a performance management system because these systems enhance continuous change. The organization tries to adjust itself quickly and efficiently to changes in the environment. An efficient and effective performance management system provides information that triggers a reaction to these changes and helps the organization to adapt these changes. This requires managers to be open to differing viewpoints and consequently to be able to make fast and timely adjustments. This competence is especially relevant in the planning and control stages, in which the organization's current situation is closely examined and adaptations are made.

The ability described above is in this research referred to as: *Flexibility & Adaptation.*

5.2.5 Behaviors Related to the Management Styles

Exhibit 5.4 lists for each management style its preferred behaviors. To avoid the possibility of managers giving socially desirable answers, behaviors have been formulated either in a positive or a negative manner. The negative formulations are indicated in Exhibit 5.4 with the negative (–) sign. This means that the results on these behaviors have to be interpreted in the opposite way. For example, a positive answer on behavior AT2, "My intuition and feelings guide the decisions that I finally make (–)", indicates that this manager relies on his feelings and thus not on his analytical capabilities. Consequently, this manager does not behave in an analytical manner when using the performance management system.

	Analytical Thinking (AT)
	- Uses logical and rational processes to analyze and apply information.
AT1	I take rational decisions even if my feelings tell me to take alternative ones.
AT2	My intuition and feelings guide the decisions that I finally make. (–)
	- Efficiently divides complex problems into separate, workable elements.
AT3	When trying to understand a problem, I work it out to identify its different aspects.
	- Puts things in a logical causal order.
AT4	When confronted with an unexpected outcome, I make a list of sequential events that may have caused it.
AT5	With many problems, I am not interested in what the causes were; they just have to be solved immediately! (–)
	- Uses if–then reasoning to identify potential obstacles or to take decisions that will influence the future.
AT6	I try to predict the potential consequences and future courses of events resulting from implementation of alternative courses of action.
	- Identifies whether an approach is useful and when it is not.
AT7	When facing a problem, I immediately take a decision, without first considering a number of possible alternatives. (–)
AT8	I consciously consider several different approaches before tackling a problem.
	Conceptual Thinking (CT)
	- Uses abstract reasoning to connect various sources of information logically.
CT1	I understand new things by seeing how they fit with what I already know.
CT2	When performing a task that is new to me, I first investigate how it is related to other tasks that I performed in the past.
	- Identifies crucial information from various data and concepts.
CT3	I combine relevant information and concepts from several very different sources to get a clear picture of the situation.
CT4	When I need to assess a situation, I look at the information available. (–)
	- Translates complex information and insights into understandable, meaningful concepts.
CT5	When I want to solve a complex problem, I try to redefine it into concepts that are recognizable to me.
CT6	I can get so intensively focused on specific details, that I forget the big picture. (–)
	Communication (C)
	- Listens objectively and translates the content of the message in his or her own words.
C1	I repeat something that someone says to me in my own words to ensure that I have understood the message correctly.
C2	When someone is speaking to me (or to an audience that I am part of), I am able to instantly stop thinking about anything else and concentrate on what is being said.
	- Uses various forms and styles of written communication.
C3	I have a variety of writing styles from which I choose the most appropriate for the reader that I am addressing my correspondence to.

C4	I don't pay attention to the layout of my reports: it is the content that counts. (–)
	- Speaks effectively to individuals and groups of people.
C5	After I have given a presentation, people ask me to give further clarifications. (–)
	- Expresses his or her needs, wishes, opinions and expectations without hurting other people's feelings.
C6	I pay particular attention to others' feelings when expressing myself.
C7	I only express my opinion or expectations when I expect people to accept them. (–)
	Teamwork & Cooperation (TC)
	- Motivates team members to work toward shared targets.
TC1	I encourage others in the group to work together.
	- Has insight into strengths and weaknesses of team members and uses the strengths to further develop the team.
TC2	I reassign members of a group to different tasks/responsibilities to see where they are good at.
	- Cooperates on projects.
TC3	On issues that relate to my work I decide on my own, even if I am part of a group. (–)
	- Share plans, information and information sources.
TC4	I am quite selective when it comes to sharing my information or knowledge with others. (–)
TC5	When I hear that someone else in my team needs resources that I possess, I immediately offer to share some of these resources with him/her.
	- Encourages a friendly and cooperative atmosphere.
TC6	I encourage others to visit me for support, advice, or encouragement.
	- Detects and acts on opportunities to cooperate.
TC7	During work meetings I take the initiative to meet the new people that are present.
	- Shares successes and responsibilities.
TC8	I share the credit with everyone who contributed to a success, even if I was the main contributor.
	Flexibility & Adaptation (FA)
	- Is flexible with various demands, changing priorities and fast changes.
FA1	I am uncomfortable when I have to handle several things at once. (–)
FA2	I adapt quickly to changes in my work situation.
	- Is flexible in the way he or she sees things.
FA3	I look at issues from the perspectives of different interest groups.
FA4	I avoid listening to other persons' point of view when I have already formed my own opinion. (–)
	- Adjust his or her approach in response to changing circumstances.
FA5	I adjust my approach to changing circumstances.
FA6	I hang on to successful approaches as long as possible, even when I know the circumstances are changing. (–)

Exhibit 5.4: Management styles and behaviors used in the self-constructed questionnaire

The assumption is that the self-constructed questionnaire can be applied to measure the management styles a manager displays if he or she is using a performance management system. Again, just as with the Doll and Torkzadeh questionnaire, this assumption must be verified before commencing with testing the hypotheses.

5.3 HYPOTHESES

According to Gelderman (2000) an actively used performance management system has a distinct influence on managers' performance. However, Vandenbosch (1999) warns that due to the many interrelated factors that contribute to organizational performance, it is difficult to attribute a direct causal relationship between the use of information and indicators of organizational performance such as profits or sales growth. Vandenbosch proposes to focus on a particular technology – to identify the (perceived) impact of the specific information provided by the technology, rather than the impact of information in general. The focus here is then on the use and impact of a performance management system.

The link between performance management system use, management styles, and organizational performance can be seen in the light of the definition of Murphy (1990) for performance: "The performance domain is defined as the set of behaviors that are relevant to the goals of the organization or organizational unit in which a person works." Campbell et al. (1993) goes further by defining performance as being synonymous with behavior: "Performance consists of goal-relevant actions that are under control of the individual, regardless of whether they are cognitive, motor, psychomotor, or interpersonal."

According to Williams (1998), system or contextual factors also have an influence on what people accomplish and on how they behave. Euske et al. (1993) state that there are several factors that, if combined, determine the impact of a performance management system on organizational performance. These include the organizational context in which the performance management system is used, the use made of the performance management system in the evaluation process, the degree of alignment between the performance management system and organizational objectives, and the individual's motivational response to the performance management system. Kotter and Heskett (1992) suggest that four factors shape managerial behavior in organizations: the corporate culture; the formal structure, systems, plans and policies; leadership; and the competitive and regulatory environment. Algera (2000) lists the following context factors: the power of decisions managers have, their leadership style, the structure of the reward systems, and the structure of the feedback information.

As Gelderman (2000) states, it can be expected from managers that they are able to judge whether or not use of the performance management system has a positive influence on their performance. According to the expectancy theory, if a manager is of the opinion that using the performance management system is indeed beneficial, he or she will be willing to use the performance management system. This willingness becomes stronger when the expected benefits of using the performance management system are higher. This, in turn, leads to the actual use of the performance management system, which then leads to the expected improved organizational performance. If management styles and types of performance management system use are inserted in the schematic overview of the study scope (given in Exhibit 1.1), a so-called causal flow model (Spencer and Spencer, 1993) is created (Exhibit 5.5).

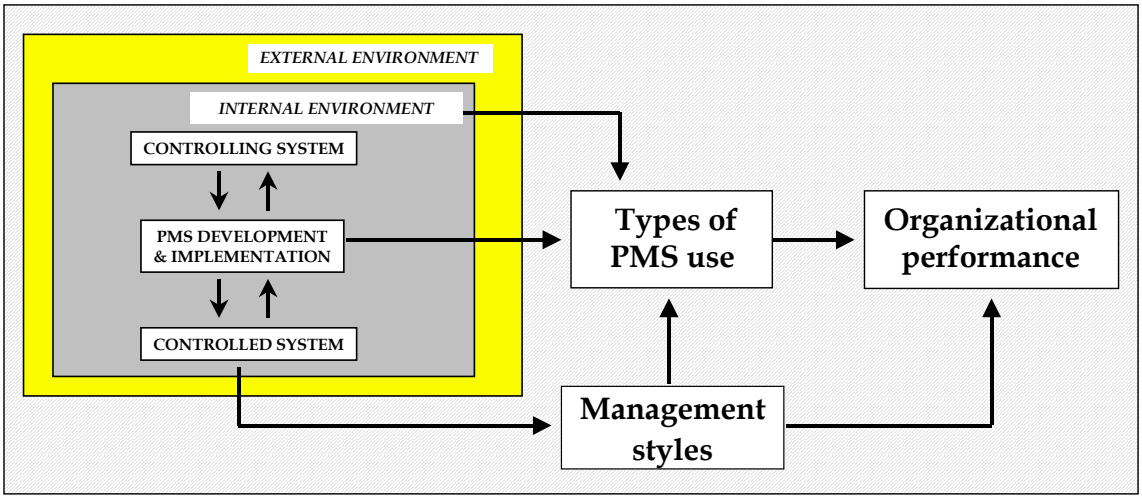


Exhibit 5.5: Causal flow model (adapted from Spencer and Spencer, 1993)

In the causal flow model, management styles influence both the types of performance management system use managers apply and organizational performance. The types of performance management system use can also influence organizational performance. The organizational environment, specifically the nature of the organization (internal), influences the types of performance management system use managers apply in that organization. The causal flow model gives rise to several hypotheses:

Hypothesis 1: *Specific management styles are related to specific types of performance management system use.*

Hypothesis 2: *A manager's use of a performance management system influences organizational performance favorably.*

Hypothesis 3: *Specific management styles influence organizational performance favorably.*

5.3.1 Management Styles

To obtain meaningful results, hypothesis 1 (Specific management styles are related to specific types of performance management system use) should be further specified. For this, several management models described in the literature were examined. These management models are in general aiming to map, identify, and subsequently explain the factors that influence the effectiveness of managers' leadership. It is interesting to hypothesize on the basis of these theoretical models which specific management styles give the highest chance on which specific types of performance management system use.[8]

[8] In Chapter 6, the performance management system uses and management styles are converted into factors, using statistical analyses. For convenience sake, these factors are already used here, during the comparison with the theoretical management models. They are: performance management system use factors: Decision Support (DS), Work Integration (WI), Communication (CO); Management style factors: Analytical Thinking (AT), Conceptual Thinking (CT), Teamwork & Cooperation (TC), Flexibility & Adaptation (FA), and Communication (C).

The management models looked at are those of Reddin (1977), Hersey and Blanchard (1982), Kolb et al. (1984), Quinn et al. (1990), Euske et al. (1993), Mintzberg (in: Goedmakers et al., 1994), Hope and Fraser (1999), and Johnston and Fitzgerald (2000). The red thread in these management models is that the use of a performance management system for specific purposes can indeed be tied to specific management styles.

Managers with *analytical* and *conceptual thinking* management styles are proficient at problem solving, making decisions, and implementing ideas across the organization. They are focused on rationalizing problems and dealing with disturbances in the organization. They try to reduce information overload and are used to identifying cause–and–effect chains and relationships across the organization and systematically comparing the findings. During internal interactions, logic and rational thinking are leading for these managers. Conceptual managers are also proficient at thinking about and visualizing alternatives and looking at a situation from different angles.
It seems that the performance management system use types *Decision Support* and *Work Integration* can best support these managers.

Managers with a *flexible* and *adaptive* management style are proficient at adapting to the circumstances and particular working environments and individuals and groups of persons. These managers are concerned with managing the internal operations of the organization, but mainly focus on dealing with disturbances and problem solving. Priority is given to execution of the work and to people who have to do that work.
It seems that the performance management system use types *Decision Support, Work Integration,* and *Communication* can best support these managers.

Managers with a *cooperative* management style are proficient at working in a team-based environment in which cooperating across the organization is prevalent. These managers are concerned with creating and maintaining an effective team across the organization to be able to manage the internal operations of the organization effectively. It seems that the performance management system use type *Work Integration* can best support these managers.

Managers with a *communicative* management style are proficient at interacting effectively with people inside and outside the organization. These managers can spend a great deal of time outside of the organization to try to win orders or obtain exclusive information and to strengthen the reputation of the organization. They are adept at managing internal and external projects. Their focus lies on teamwork and internal interactions, and priority is given to people. It seems that the performance management system use types *Work Integration* and *Communication* can best support these managers.

Hypothesis 1 (Specific management styles are related to specific types of performance management system use) can now be specified further. This is done by combining management styles with particular types of performance management system use, as provided by the assessments made of the theoretical management models. In Appendix I, the manner in which management styles have been derived from these management models is described in more detail.

The following hypotheses are constructed:

Hypothesis 1a: Management style Analytical Thinking is related to types of performance management system use Decision Support and Work Integration.

Hypothesis 1b: Management style Conceptual Thinking is related to types of performance management system use Decision Support and Work Integration.

Hypothesis 1c: Management style Flexibility & Adaptation is related to types of performance management system use Decision Support, Work Integration, and Communication.

Hypothesis 1d: Management style Teamwork & Cooperation is related to type of performance management system use Work Integration.

Hypothesis 1e: Management style Communication is related to types of performance management system use Work Integration and Communication.

5.3.2 Organizational Performance

With regard to hypothesis 2 (A manager's use of a performance management system influences organizational performance favorably), the literature explicitly predicts a favorable effect on the performance in the innovation area (Kaplan and Norton, 1996b). Using a performance management system is predicted to foster a focus on innovation throughout the whole organization. CSFs and KPIs characteristically focus on nonfinancial data. Innovation per definition is nonfinancial of nature because the financial benefit from new ideas, if any, often can be noticed only after a significant time span. The BSC has a perspective called innovation, which focuses on managers being continuously innovative.
Paying attention to innovation in this way by using performance indicators and the innovation perspective results in better performance on this aspect. As Kaplan and Norton (2000) state: "The learning and growth initiatives are the ultimate drivers of strategic outcomes." However, the literature does not spell out which particular type of performance management system use has the favorable effect on the performance in the innovation area. The hypothesis therefore is:

Hypothesis 4: A manager's use of a performance management system influences the level of innovation favorably.

Good performance measures are promotive of cooperation both horizontally and vertically throughout the organization (McMann and Nanni, 1994). In this respect, Harber (1998) states that team-based environments are best equipped for effective rollout of the scorecard. Johnston and Fitzgerald (2000) agree that the team-based approach to management encourages cross-fertilization of ideas and promotes innovation. Local initiatives are encouraged, with performance measured at a local level and an understanding culture that recognizes there will be some failures; there is freedom to make mistakes. Scott and Tiessen (1999) state that successful teams require the empowerment of team members, an adequate information base, rewards for team performance, and the requisite abilities in team members. They further report that teams that feature performance measurement, with both financial and nonfinancial indicators, and that encourage team members to participate in developing performance tar-

gets, perform better than those that do not. Hope and Hope (1995) warn that in a team-based structure, measures must be agreed on and monitored by the teams, not by top management. In fact, if superiors start to interfere on the basis of evidence from their own measures (by demanding changes), the whole delicate edifice of the team-based system might well be undermined and could possibly collapse. This leads to the following hypothesis:

Hypothesis 5: Management style Teamwork & Cooperation influences organizational performance favorably.

5.3.3 Type of Organization

According to Atkinson and McCrindell (1997a) and Smith (1993, 1995), the nonprofit sector lags behind in comparison with the profit sector in applying CSFs, KPIs, and the BSC and therefore has yet to achieve the same benefits as the profit sector. Reasons for this are, among other things, that applying performance management in the nonprofit sector tends to be more difficult than in the profit sector (Boorsma, 1999) and that public sector managerial behavior is not yet attuned (enough) to performance management (Smith, 1993, 1995). As Boorsma states: "Despite the ongoing efforts to improve performance in the public sector, little has changed when it comes to administrative behavior and culture." However, the public sector is trying hard to catch up to the profit sector as the increasing number of articles, reports, and manuals that are specially written for the nonprofit sector indicates (United States General Accounting Office, 1999; National Academy of Public Administration, 1998; National Partnership for Reinventing Government, 1999).

Manufacturing organizations have a long history, starting with Taylor, of measuring their production processes (Kaydos, 1999). The implementation of total quality management (TQM) was another great boost for the measurement movement (Zairi, 1996). Due to these developments, the transition to performance indicators came naturally. Kaplan and Norton (1996a) reported that the first organizations that converted to the BSC were predominantly manufacturing companies. Mia and Clarke (1999) convey the results of research into the relationship between intensity of market competition and business unit performance, and the role that information provided by the performance management system played into this. The results indicate that the intensity of market competition is a determinant of the use of the information, which in turn is a determinant of business unit performance. An interpretation of the results is that those organizations that use the information can effectively face competition in the market and thereby improve performance.

The literature does predict that a performance management system will be used more in profit and manufacturing environments than in nonprofit and nonmanufacturing environments. However, which particular types of performance management system use are applied more often is not explicitly predicted.

The two hypotheses with regard to organizational type are:

Hypothesis 6: *A performance management system is used more often in the profit sector than in the nonprofit sector.*

Hypothesis 7: *A performance management system is used more often in manufacturing companies than in nonmanufacturing companies.*

In the next chapter, the hypotheses are tested on the basis of a survey into the management styles of managers and their types of performance management system use.

6 Phase II – Performance Management System and Managerial Behavior Survey

In Chapter 5, specific management styles that managers theoretically should display to make frequent, day-to-day use of a performance management system for specific purposes, were identified during a literature study. In addition, hypotheses were drafted about the relationships between the identified performance management system uses and management styles. In this chapter, a description is given of how the survey method was used to test these hypotheses at 11 organizations.

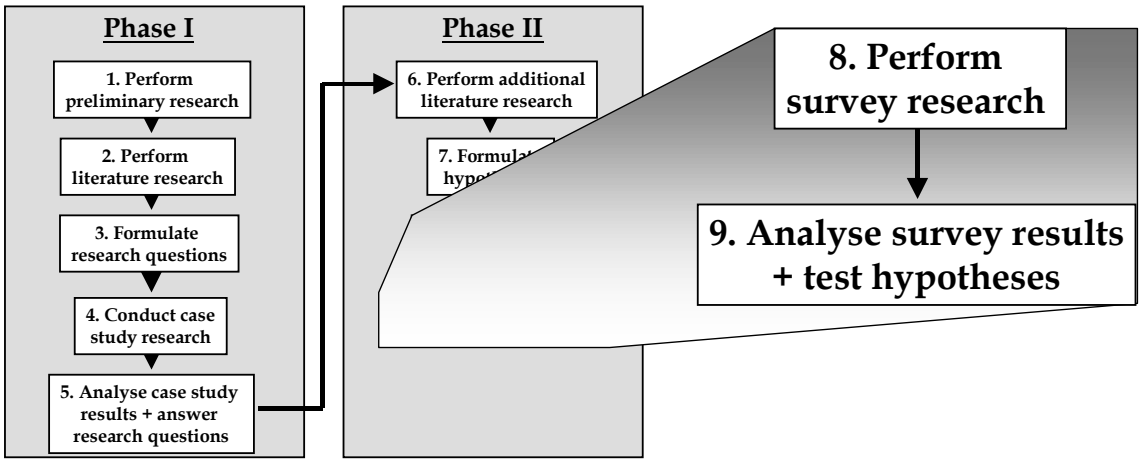


Exhibit 6.1: Research stages described in Chapter 6

6.1 SURVEY APPROACH

In phase II, the survey was chosen as the research method. There were several reasons for this. The first reason was that the wide range of hypotheses, discussed in the previous chapter, calls for several participating organizations in order to find enough information to prove or disprove these hypotheses. For example, the hypotheses that relate to types of organizations (hypotheses 6 and 7) demand research at different types of organizations. The second reason was that the target group of research consisted of managers who were generally very busy. It was assumed that claiming only one hour of their time instead of an in-depth interview that could last several hours would heighten the chance of cooperation. In this way, the participation of several organizations was assured. The third reason was that a survey could produce a considerable amount of useful data that may be turned into general results (Strati, 2000).

For the survey, the questionnaire on measures of performance management system use, adapted from Doll and Torkzadeh (Exhibit 5.3) was combined with the questionnaire on management styles (Exhibit 5.4) and with general questions about age, sex, and management experience. In order to limit the number of socially desirable answers, the questions were alternatively formulated in a positive and a negative way. This resulted in a self-constructed questionnaire, which is given in Appendix H, together with an example of the cover letter and the explanatory memo that were used.

The questionnaire was pretested with five consultants of Andersen. The goal of this pretest was to evaluate how clear, understandable and easy-to-complete the questionnaire was. On the basis of the test, alterations were made to the order and the wording of some of the questions. Because both an English and a Dutch questionnaire were to be used, the Dutch pretested questionnaire was translated into English. The English version was checked by a native speaker, who was also fluent in Dutch after having lived in the Netherlands for several years, and then translated back by her into Dutch. The original and translated-back Dutch versions were then compared to make sure that both the Dutch and the English questionnaire asked for the same things. On the basis of the comparison, changes were made in the English wording of some of the questions.

Potentially suitable organizations were selected on the basis of two criteria. The first criterion was that the participating organization should have a balanced performance management system at its disposal for at least two to three years. This means that the performance management system contains financial as well as nonfinancial information, in the shape of critical success factors (CSFs), key performance indicators (KPIs), and/or the balanced scorecard (BSC). The reason for using the time limit is the potentially disruptive changes a performance management system implementation can bring with it (resistance, cultural barriers, change management issues). These issues could distort the perception of users about their performance management systems. The assumption was that after a period of approximately two years, the situation surrounding the performance management system should have settled down enough for users to give answers in a fairly objective way. The second criterion was a pragmatic one: either the researcher or colleagues from Andersen should have contacts at the candidate organization.
After contact was made with the candidate organization, an introductory meeting took place between the researcher and the contact person. After this meeting, the questionnaire with a cover letter and an explanatory memo was distributed to the contact person. The contact person then distributed the questionnaire among managers from this organization. At most organizations, the contact person sent out a reminder e-mail to the managers to return the completed questionnaires. Anonymity was guaranteed to the respondents and 80% of the questionnaires were returned directly to the researcher.

The organizations that participated in the survey are described in Exhibit 6.2. The following characteristics are given: organizational level of the participating units (headquarters or business unit); industry type (profit or nonprofit); whether it is a manufacturing type or a service type of organization; and whether it concerns a multinational or a national organization. The "Size" column indicates whether the participating unit was large or small in headcount. In the "Q" column, the number of questionnaires distributed in the organization is given; in the "R" column, the number and percentage of returned questionnaires is given.

Organization	Description	Level	Q	R	Industry	Type	Sort	Size
Philips Lighting	Lighting product manufacturer	Business unit	60	51 (85%)	Profit	Manufacturing	Multi-national	Large
Corus	Steel and aluminium manufacturer	Business unit	20	12 (60%)	Profit	Manufacturing	Multi-national	Large
SKF Engineering and Research	Research center of ball-bearing manufacturer	Business unit	5	2 (40%)	Profit	Non manufacturing	Multi-national	Small
Bass Brewers	Distiller	Head-quarters	4	1 (25%)	Profit	Manufacturing	National (UK)	Small
Cadbury Schweppes	Distiller	Head-quarters	3	1 (33%)	Profit	Manufacturing	National (UK)	Small
Andersen Business Consulting	Consultancy firm	Business unit	10	9 (90%)	Profit	Non manufacturing	Multi-national	Small
CSM Levensmiddelen	Food producer	Business unit	4	2 (50%)	Profit	Manufacturing	Multi-national	Large
DHL	Transport company	Business unit	2	1 (50%)	Profit	Non manufacturing	Multi-national	Small
Wessanen	Food producer	Business unit	12	8 (67%)	Profit	Manufacturing	Multi-national	Large
Xerox	Document company	Business unit	3	1 (33%)	Profit	Manufacturing	Multi-national	Large
WBV Het Oosten	Social housing association	Head-quarters	28	23 (82%)	Non-profit	Non-manufacturing	National (Dutch)	Small
Centrale Financiën Instellingen	Governmental agency	Head-quarters	13	10 (77%)	Non-profit	Non-manufacturing	National (Dutch)	Small
Total			164	121 (74%)				

Exhibit 6.2: Description of participating organizations

In total, 164 questionnaires were distributed, of which 121 completed questionnaires were returned. The response rate in many organizations was quite high. This can be explained by the fact that the contact persons and the researcher were personally acquainted. In addition, the contact persons held such positions in their organization that they could encourage people to fill out the questionnaire.

Three of the returned questionnaires were invalid and removed, as they had less than half of the questions completed, giving a total of 118 valid questionnaires that were analyzed. Exhibit 6.3 gives some statistics about the managers who completed valid questionnaires.

Manager Characteristic	Mean	Standard Deviation	Min	Max
Age (in years)	45.31	7.71	24	60
Experience in current profession (years)	14.91	9.30	0	35
Experience in current position (years)	4.12	4.45	0	30
Employees directly responsible for (no.)	9.08	7.92	0	70
Employees indirectly responsible for (no.)	1,295.35	5,723.95	0	50,000
Organizational units directly responsible for (no.)	3.47	3.10	0	12
Organizational units indirectly responsible for (no.)	10.74	22.42	0	200
Working hours per week	50.33	11.57	5	70
Time spent on managing (hours)	39.88	17.75	0	70
Time spent on studying reports (hours)	3.45	5.79	0	50
Time spent on studying report appendices (hours)	1.50	1.44	0	10
Gender	88.2% male	11.8% female		

Exhibit 6.3: Statistics of managers who completed questionnaire

The age of the respondents (between 24 and 60 years with an average of 45 years and a standard deviation of 8 years) fits the profile of the target group of the survey, namely people in executive positions. Executives tend to be older and have quite a bit of experience in their profession. The number of organizational units and people for which these executives are responsible varies. This is a reflection of the variety in the sort of surveyed organizations, which consisted of both national (small) and multinational (large) organizations. The working hours spent on managing and studying reports indicates that there were probably some part-timers and people in non-executive positions among the respondents.

At three companies, additional open interviews with 10 managers were conducted. The purpose of these interviews was to gather additional information about how these managers used their organization's performance management system and to check consistency between the answers of the questionnaire and what managers told us. In addition, the behaviors and management styles of effective performance management system users were discussed into more detail with the interviewees.

6.2 ANALYSIS OF THE QUESTIONNAIRE

In this section, a description is given of how the various assumptions regarding the possibility of using the Doll and Torkzadeh questionnaire – to measure types of performance management system use – and the self-constructed questionnaire – to measure management styles needed for specific type of performance management system use – were tested. In Chapter 5, it was assumed that the Doll and Torkzadeh questionnaire could be applied to measure the various types of performance management system use of managers. It was also assumed that the self-constructed questionnaire could be applied to measure the management styles that managers display when they are using a performance management system. These two assumptions have been verified before commencing the testing of the hypotheses described in Chapter 5. In this section, the results of the verification are discussed.

6.2.1 Factor Analysis of Performance Management System Use

By means of factor analysis, the underlying factors in a set of components can be identified. Doll and Torkzadeh (1998) used a principal component analysis (PCA) to put together their "measures of system use" questionnaire (see Exhibit 5.2). This type of analysis was repeated to establish whether or not the same components of performance management system use as found by Doll and Torkzadeh (problem solving, decision rationalization, horizontal integration, vertical integration, and customer service) could also be identified in this research. In this way, the assumption that the Doll and Torkzadeh questionnaire could be applied to measure the various types of performance management system use of managers would be verified.
The analysis is interesting because the Doll and Torkzadeh questionnaire was originally meant to measure system use of a management information system (MIS), not performance management system use. This means that there is a possibility that the adapted Doll and Torkzadeh questionnaire as used in this study displays different factors when it is employed to measure use of a performance management system. Since Doll and Torkzadeh identified five factors, it was assumed that the PCA would also result in five factors. For this reason, in the PCA five components were extracted without rotation. The results of this PCA are summarized in Exhibit 6.4.

No.	Performance Management System Component	Factor 1	2	3	4	5
V4	I use the performance management system to communicate with people who report to me.	**.860**				
R7	I use the performance management system to make the decision process more rational.	**.856**				
C3	I use the performance management system to improve the quality of customer service.	**.837**				
R6	I use the performance management system to improve the effectiveness and efficiency of the decision process.	**.823**				
H1	I use the performance management system to communicate with other people in my work group.	**.813**				
H2	My work group and I use the performance management system to coordinate our activities.	**.813**	–.325			
C4	I use the performance management system to more creatively serve customers.	**.808**				
R3	I use the performance management system to help me make explicit the reasons for my decisions.	**.801**				
R1	I use the performance management system to help me explain my decisions.	**.799**				
V5	I use the performance management system to communicate with people to whom I report.	**.795**		–.417		
H3	I use the performance management system to coordinate activities with others in my work group.	**.793**				–.330
V8	I use the performance management system to get feedback on job performance.	**.784**				
C2	I use the performance management system to serve internal and/or external customers.	**.783**				–.331
P4	I use the performance management system to check my thinking against the data.	**.779**				
C1	I use the performance management system to deal more strategically with internal and/or external customers.	**.767**	–.384			
V2	I use the performance management system to monitor my own performance.	**.763**				
R2	I use the performance management system to help me justify my decisions.	**.746**				
V3	I use the performance management system to plan my work.	**.741**			–.407	
P5	I use the performance management system to make sense of the data.	**.714**			.354	
C5	I use the performance management system to exchange information with internal and/or external customers.	**.698**	–.459			
P1	I use the performance management system to decide how best to approach a problem.	**.681**				.303
P6	I use the performance management system to analyze why problems occur.	**.672**			.530	

Exhibit 6.4: Principal component analysis of performance management system use components: five components extracted without rotation

The first factor, containing all 22 components (with loadings between .860 and .672), basically is a combination of all the adapted Doll and Torkzadeh components together; this can also be seen from the scree plot in Exhibit 6.5. This first factor explains 61% of the total variance.

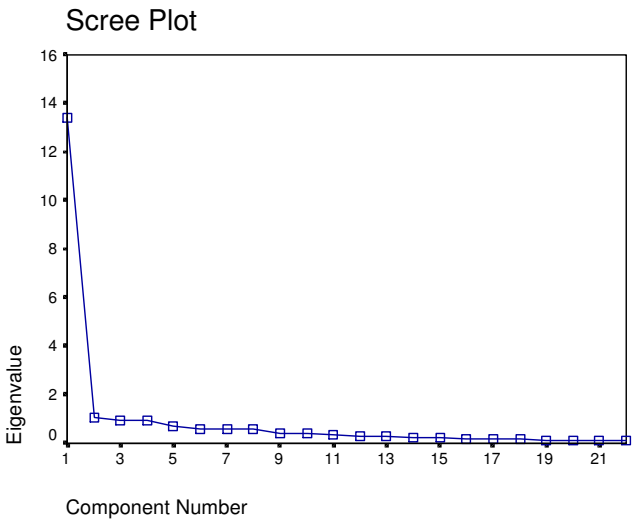


Exhibit 6.5: PCA scree plot of performance management system use components

The Doll and Torkzadeh questionnaire is based on the assumption that one can clearly identify the different types of MIS use of managers. In contrast, the PCA for the adapted Doll and Torkzadeh questionnaire shows that the respondents of the survey basically use the performance management system for all its purposes. Since all the components, without exception, load higher than .670 on the first factor, no real difference can be made between the various types of performance management system use as postulated in the adapted Doll and Torkzadeh questionnaire. The PCA outcome fits with the main activity of a manager, namely managing. Managing basically consists of a collection of various activities that deal with internal processes, external relations, human aspects, and (especially) communication. All these activities are supported by a well-designed performance management system (see the literature overview in Chapter 2).

For further analysis, it is useful to perform additional factor analyses, this time using Oblimin rotation to obtain a more discerning picture.[9] The grouping of components in factors is finalized in such a way that an interpretable structure is created. The results are summarized in Exhibit 6.6.

[9] As a cross-check a varimax rotation was also performed. This did not result in clear factors. It was therefore decided to stick to the results depicted in Exhibit 6.6.

No.	Performance Management System Component	Factor		
		DS	WI	CO
R2	I use the performance management system to help me justify my decisions.	**.481**		–.386
R3	I use the performance management system to help me make explicit the reasons for my decisions.	**.459**		–.490
R6	I use the performance management system to improve the effectiveness and efficiency of the decision process.	**.649**		
R7	I use the performance management system to make the decision process more rational.	**.541**		
P1	I use the performance management system to decide how best to approach a problem.	**.777**		
P4	I use the performance management system to check my thinking against the data.	**.897**		
P5	I use the performance management system to make sense of the data.	**.656**		
P6	I use the performance management system to analyze why problems occur.	**.662**		
V3	I use the performance management system to plan my work.	**.674**		
C4	I use the performance management system to more creatively serve customers.	**.705**	–.306	
H1	I use the performance management system to communicate with other people in my work group.		**.450**	.554
H2	My work group and I use the performance management system to coordinate our activities.		**.599**	.345
H3	I use the performance management system to coordinate activities with others in my work group.		**.533**	
C1	I use the performance management system to deal more strategically with internal and/or external customers.	–.344	**.658**	
C2	I use the performance management system to serve internal and/or external customers.	–.496	**.436**	
C3	I use the performance management system to improve the quality of customer service.	–.447	**.320**	
C5	I use the performance management system to exchange information with internal and/or external customers.		**.726**	
V2	I use the performance management system to monitor my own performance.			**.778**
V4	I use the performance management system to communicate with people who report to me.			**.678**
V5	I use the performance management system to communicate with people to whom I report.			**.910**
V8	I use the performance management system to get feedback on job performance.			**.711**
R1	I use the performance management system to help me explain my decisions.			**.770**

Exhibit 6.6: Principal component analysis of performance management system use components: three components extracted, Oblimin rotation with Kaiser normalization, 23 iterations

The analysis results in a three-factor structure with some components loading on several factors. The factors are constructed by taking the unweighted average of the components. The three factors explain 70% of the total variance. Eigenvalues of the factors are respectively 13.389, 1.039 and .962.

The first factor, *Decision Support* (DS), matches almost completely the Doll and Torkzadeh MIS use factors "problem solving" and "decision rationalization" taken together, matching their system use term "decision support" (see Exhibit 5.2). Component R3 (I use the performance management system to help me make explicit the reasons for my decisions), which loads equally well on factors DS and CO, has been added to factor DS because this component seems to be more relevant for rationalizing decisions. Components C2 and C3, both loading on factor DS as well as on factor WI, were removed from factor DS and added to factor WI, creating an even better overlap with the Doll and Torkzadeh questionnaire. There are two components in factor DS that do not match the original Doll and Torkzadeh grouping. First, component V3 (I use the performance management system to plan my work) could well belong to factor DS because planning one's work can be seen as making decisions about the order and priority of activities. Secondly, component C4 (I use the performance management system to more creatively serve customers) can be seen as a specific example of a problem that has to be solved: How to better serve the customer? By viewing the component in this way, it clearly belongs to factor DS.

The second factor, *Work Integration* (WI), matches almost completely the Doll and Torkzadeh MIS use factors "horizontal integration" and "customer service" taken together with only component C4 missing. Factor WI can be viewed as a process improvement factor with the process of servicing the customer being just another one of those processes that have to be performed well in an integrated way by manager and team. For this reason, components C2 (I use the performance management system to serve internal and/or external customers) and C3 (I use the performance management system to improve the quality of customer service) can be added to factor WI because they both deal with the customer servicing process.

Finally, the third factor, *Communication* (CO), matches the Doll and Torkzadeh MIS use factor "vertical integration" with the addition of component R1 (I use the performance management system to help me explain my decisions). This component can clearly be seen as part of a communication process, complementing components V4 and V5. For this reason, the Doll and Torkzadeh MIS use factor "vertical integration" was renamed in this study to "communication".

The answers from the respondents have been plotted in a histogram to give insight into the number of managers who use the performance management system for a specific purpose (Exhibit 6.7). The exhibit shows that many respondents use the performance management system for various purposes, as predicted from the results in Exhibit 6.4. The performance management system is used (to a certain extent) by managers for all purposes of the performance management system, not only for specific purposes.

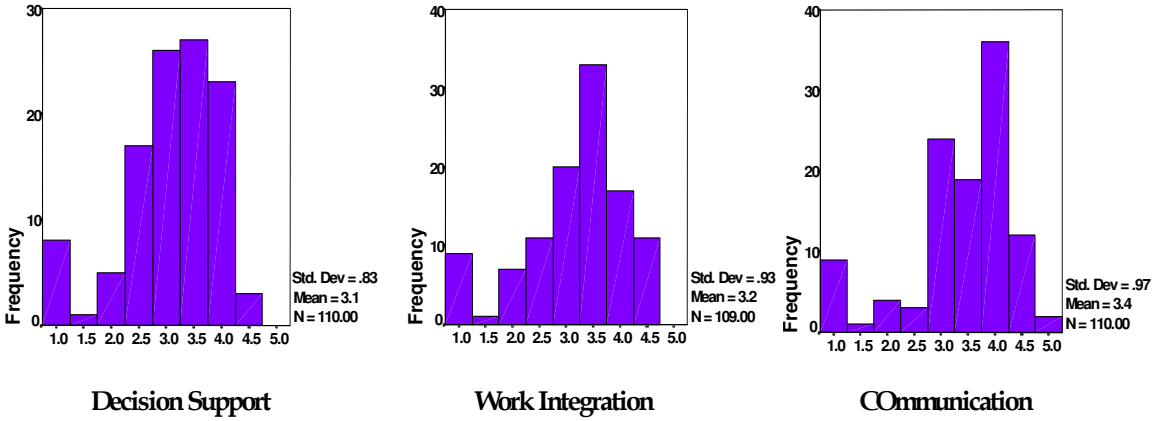


Exhibit 6.7: Number of respondents who agree with the statement that they use the performance management system for a specific purpose (1 = strongly disagree, 3 = undecided, 5 = strongly agree)

To verify the importance of the performance management system for the respondents, their answers on question V3_4 in the questionnaire given in Appendix H (In order to exercise your function, is it necessary to monitor what is happening in the organization yourself or does the performance management system suffice?) have also been plotted in a histogram (Exhibit 6.8). The majority of the respondents indicate they find the performance management system, in addition to their own observations, very important.

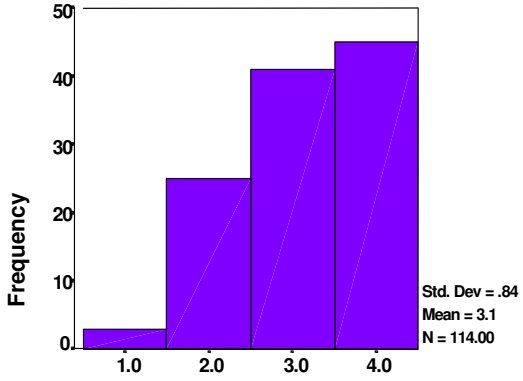


Exhibit 6.8: Indication of importance of performance management system to respondents (1 = performance management system is useless, I depend completely on own observation; 4 = performance management system is very important, but own observation is also important)

Exhibit 6.9 lists information about the factors (mean of all answers, range, standard deviation, reliability) and also gives the correlations between the factors, resulting from the oblique rotation. The factors display strong correlations, which indicates that managers use all the components of a performance management system approximately to the same extent. The factors are also shown by Cronbach's α of higher than .91 to be very reliable. It can be concluded that a performance management system generally is used (to a certain extent) as an entity, instead of using one part frequently and other parts not at all. This corresponds with the result of the unrotated PCA described earlier in this section.

Performance Management System Use Factor	Factor Information			
	Mean	Range	SD	Cronbach's α
Decision Support	2.92	2.56 – 3.44	.88	.9317
Work Integration	2.83	2.50 – 3.22	.72	.9245
Communication	2.63	2.45 – 2.93	.49	.9197

Performance Management System Use Factor		Performance Management System Use Factor		
		Decision Support	Work Integration	Communication
Decision Support	*Correlation*	1.000	.841	.834
	Significance		.000	.000
	N	110	109	110
Work Integration	*Correlation*	.841	1.000	.808
	Significance	.000		.000
	N	109	109	109
Communication	*Correlation*	.834	.808	1.000
	Significance	.000	.000	
	N	110	109	110

Exhibit 6.9: Information and component correlation results for performance management system use factors

In summary, it can be concluded that using the Doll and Torkzadeh questionnaire is justified as a basis for measuring the use of a performance management system. Consequently, the assumption that the Doll and Torkzadeh questionnaire can be applied to measure the various types of performance management system use of managers has been proven correct.

6.2.2 Factor Analysis of Management Styles

A principal component analysis (PCA) was used to verify the assumption that the self-constructed questionnaire could be applied to measure the management styles associated with certain types of performance management system use. With this method, common factors were looked for in the measured components. This analysis is needed because the management styles have been grouped arbitrarily in the self-constructed questionnaire. It therefore has to be checked whether another, more logical grouping is possible. It was assumed that the PCA would result in five factors. For this reason, in the PCA five components were extracted with rotation. The results are summarized in Exhibit 6.10.

No.	Management Style Component	Factor 1	2	3	4	5
AT1	I take rational decisions even if my feelings tell me to take alternative ones.	**.706**				
AT2	My intuition and feelings guide the decisions that I finally make. (–)	**–.772**				
AT5	With many problems, I am not interested in what the causes were; they just have to be solved immediately! (–)	**–.387**				
AT7	When facing a problem, I immediately take a decision, without first considering a number of possible alternatives. (–)	**–.407**	–.356			
CT1	I understand new things by seeing how they fit with what I already know.		**.564**			
CT2	When performing a task that is new to me, I first investigate how it is related to other tasks that I performed in the past.		**.570**			
CT3	I combine relevant information and concepts from several very different sources to get a clear picture of the situation.		**.514**			
CT4	When I need to assess a situation, I look at the information available. (–)		**.536**			
CT5	When I want to solve a complex problem, I try to redefine it into concepts that are recognizable to me.		**.407**			
AT3	When trying to understand a problem, I work it out to identify its different aspects.		**.560**			
AT8	I consciously consider several different approaches before tackling a problem.		**.572**			.415
C1	I repeat something that someone says to me in my own words to ensure that I have understood the message correctly.		**.490**			
TC1	I encourage others in the group to work together.			**.680**		
TC6	I encourage others to visit me for support, advice, or encouragement.			**.538**		
TC8	I share the credit with everyone, who contributed to a success, even if I was the main contributor.			**.602**		
C4	I don't pay attention to the layout of my reports: it is the content that counts. (–)			**.484**	.378	
C5	After I have given a presentation, people ask me to give further clarifications. (–)			**.593**		
FA1	I am uncomfortable when I have to handle several things at once. (–)		–.352		**–.446**	
FA2	I adapt quickly to changes in my work situation.				**.601**	–.417
FA3	I look at issues from the perspectives of different interest groups.		–.374		**.428**	
FA5	I adjust my approach to changing circumstances.				**.625**	
C2	When someone is speaking to me (or to an audience that I am part of), I am able to instantly stop thinking about anything else and concentrate on what is being said.				**.658**	
C6	I pay particular attention to others' feelings when expressing myself.				**.500**	
TC4	I am quite selective when it comes to sharing my information or knowledge with others. (–)	.338	–.316		**–.365**	
TC7	During work meetings I take the initiative to meet the new people that are present.				**.584**	

No.	Management Style Component	Factor 1	2	3	4	5
AT6	I try to predict the potential consequences and future courses of events resulting from implementation of alternative courses of action.		–.370		**.430**	
FA4	I avoid listening to other persons' point of view when I have already formed my own opinion. (–)			.357		**–.315**
FA6	I hang on to successful approaches as long as possible, even when I know the circumstances are changing. (–)					**–.492**
TC3	On issues that relate to my work I decide on my own, even if I am part of a group. (–)					**.498**
C3	I have a variety of writing styles from which I choose the most appropriate for the reader that I am addressing my correspondence to.					**–.449**
C7	I only express my opinion or expectations when I expect people to accept them. (–)					**–.475**
TC2	I reassign members of a group to different tasks/responsibilities to see where they are good at.					
TC5	When I hear that someone else in my team needs resources that I possess, I immediately offer to share some of these resources with him/her.					
CT6	I can get so intensively focused on specific details, that I forget the big picture. (–)					
AT4	When confronted with an unexpected outcome, I make a list of sequential events that may have caused it.					.322

Exhibit 6.10: Principal component analysis of management style components: five components extracted, Oblimin rotation with Kaiser normalization, 124 iterations

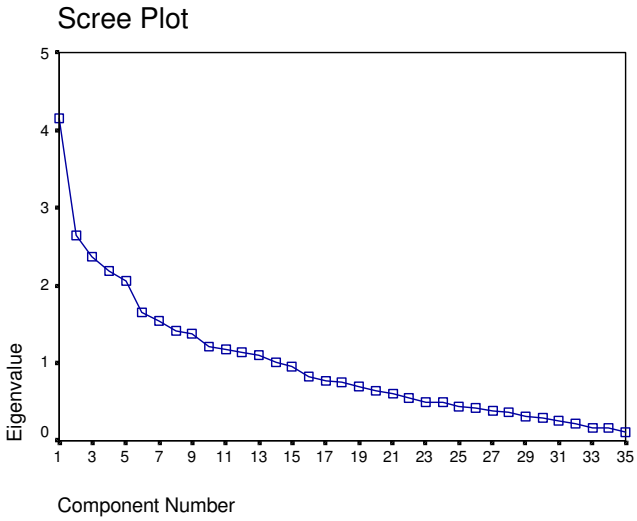


Exhibit 6.11: PCA scree plot of management style components

The five factors explain 38% of the total variance, which is rather low. Eigenvalues of the factors are respectively 2.057, 4.153, 2.374, 2.640 and 2.189 (Exhibit 6.11).

When looking at Cronbach's α (Exhibit 6.12), only factors two and four turn out to be reliable.

	Management Style Factor				
	1	**2**	**3**	**4**	**5**
Cronbach's α	.4863	.6707	.5700	.6935	.4613

Exhibit 6.12: Cronbach's α for management style factors

This outcome is too low to continue with the analysis. To increase the reliability, components were removed that either loaded lower than .3 on a factor, loaded almost equally on more than one factor, or loaded on a factor that could not be logically explained. In this way, components AT5, AT6, AT7, AT8, C4, C5, FA4, FA6 and TC4 were removed and the PCA was run again. On the basis of this PCA outcome, an extra three components were removed, FA3, TC5 and CT6 to improve even more Cronbach's α. The result is depicted in Exhibit 6.13.

The five factors in Exhibit 6.13 explain 49% of the total variance. Eigenvalues of the factors are respectively 1.497, 2.159, 1.729, 3.323 and 1.653 (Exhibit 6.14).

No.	Management Style Component	Factor				
		CT	FA	TC	C	AT
AT3	When trying to understand a problem, I work it out to identify its different aspects.	**.790**				
CT2	When performing a task that is new to me, I first investigate how it is related to other tasks that I performed in the past.	**.517**				
CT3	I combine relevant information and concepts from several very different sources to get a clear picture of the situation.	**.742**				–.306
CT4	When I need to assess a situation, I look at the information available. (–)	**.493**		.313		
CT5	When I want to solve a complex problem, I try to redefine it into concepts that are recognizable to me.	**.331**				
C2	When someone is speaking to me (or to an audience that I am part of), I am able to instantly stop thinking about anything else and concentrate on what is being said.		**.690**			
FA1	I am uncomfortable when I have to handle several things at once. (–)		**–.477**			
FA2	I adapt quickly to changes in my work situation.		**.735**			
FA5	I adjust my approach to changing circumstances.		**.603**		–.380	
TC7	During work meetings I take the initiative to meet the new people that are present.		**.442**		–.336	
TC1	I encourage others in the group to work together.			**.778**		
TC6	I encourage others to visit me for support, advice, or encouragement.			**.670**		
TC8	I share the credit with everyone, who contributed to a success, even if I was the main contributor.			**.717**		
C1	I repeat something that someone says to me in my own words to ensure that I have understood the message correctly.				**.583**	
C3	I have a variety of writing styles from which I choose the most appropriate for the reader that I am addressing my correspondence to.				**.387**	
C6	I pay particular attention to others' feelings when expressing myself.				**.608**	
CT1	I understand new things by seeing how they fit with what I already know.				**.512**	
TC2	I reassign members of a group to different tasks/responsibilities to see where they are good at.				**.320**	
TC3	On issues that relate to my work I decide on my own, even if I am part of a group. (–)				**–.624**	
AT1	I take rational decisions even if my feelings tell me to take alternative ones.					**.836**
AT2	My intuition and feelings guide the decisions that I finally make. (–)					**–.826**

Exhibit 6.13: Principal component analysis of management style components: five components extracted, Oblimin rotation with Kaiser normalization, 33 iterations

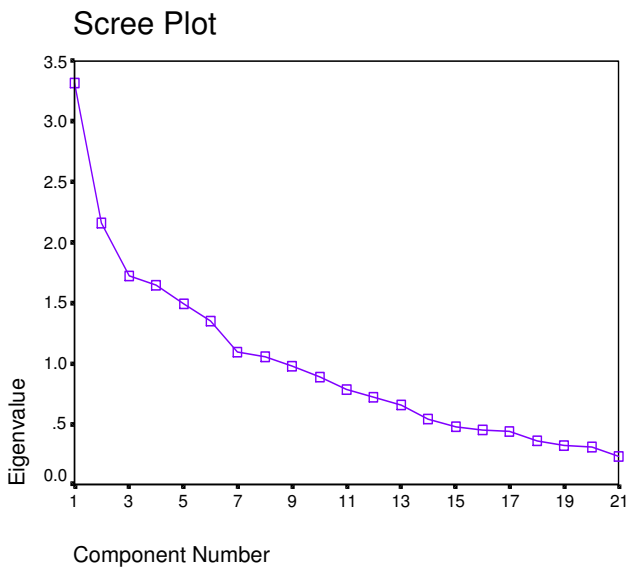


Exhibit 6.14: PCA scree plot of adjusted management style components

When looking at Cronbach's α in Exhibit 6.15, four out of five of the identified factors turn out to be reliable and one factor (C) is very close to the reliability threshold. Exhibit 6.15 also gives some additional information about the management style factors (mean, range, standard deviation).

Management Style Factor	Factor Information			
	Mean	Range	SD	Cronbach's α
Conceptual Thinking	3.12	2.74 – 3.38	.64	.6292
Flexibility & Adaptation	3.11	2.71 – 3.45	.74	.6318
Teamwork & Cooperation	3.40	3.22 – 3.53	.31	.6679
Communication	2.68	2.52 – 2.83	.31	.5579
Analytical Thinking	2.63	2.54 – 2.72	.18	.6033

Exhibit 6.15: Information for the adjusted management style factors

The scree plot in Exhibit 6.14 shows that an eight-factor solution has to be used when a border of eigenvalue 1 is taken. However, this number of factors would result in not enough components per factor, making further analysis virtually irrelevant (Gelderman, 2000). Cronbach's α in Exhibit 6.15 tells us that taking more than five factors would not be wise. It was therefore decided to continue the research with five factors, as the grouping in Exhibit 5.4 already suggested.

The first factor, *Conceptual Thinking* (CT), matches the original grouping "conceptual thinking". Only component CT1 (I understand new things by seeing how they fit with what I already know) does not load on this factor. There is one additional component that loads significantly on this factor: component AT3 (When trying to understand a problem, I work it out to identify its different aspects). This indicates the competency to break down a problem in its underlying parts is more conceptual than analytical in nature. The initial meaning of the switched component CT4 (When I need to assess a situation, I look at the information available (–)) was that a manager should not only look at the information on hand but should also collect and analyze other relevant information. This component has a positive load, which indicates that the respondents could have interpreted the question as: a manager first looks at all the information available before starting to think conceptually about a problem.

The second factor, *Flexibility & Adaptation* (FA), matches partially to the original grouping "flexibility and adaptation". The extra components, which load strongly on this factor, are indications of a flexible and adaptive style. Component C2 (When someone is speaking to me, I am able to instantly stop thinking about anything else and concentrate on what is being said) and TC7 (During work meetings I take the initiative to meet the new people who are present) indicate the manner in which a manager is flexible – either by directly adapting oneself to a situation, or by being open to new team members.

The third factor, *Teamwork & Cooperation* (TC), matches the original grouping "teamwork and cooperation". Components TC2, TC3, and TC7 load on other factors than factor TC and are not categorized under factor TC.

The fourth factor, *Communication* (C), matches the original grouping "communication". The extra components that load strongly on this factor are indications of a communicative style. Reassigning members of one group to different tasks (component TC2) can be done only in dialogue with the team members. Component TC3 (On issues that relate to my work I decide on my own, even if I am part of a group. (–)) loads negatively, meaning that the manager takes decisions after conferring with the other team members. Component CT1 (I understand new things by seeing how they fit with what I already know) seems to be the odd one out. However, it may be that the manager communicates with the other team members about the new things and how they fit in what the team knows, to get a better understanding.

The fifth factor, *Analytical Thinking* (AT), matches to the original grouping "analytical thinking". Component AT2 (My intuition and feelings guide the decisions that I finally make. (–)), which has been switched (i.e., formulated in a negative way), has a negative load, meaning it supports this factor. Component AT3 (When trying to understand a problem, I work it out to identify its different aspects) loads stronger on another factor and is therefore not categorized under factor AT but under factor CT.

The correlations between the management style factors, resulting from the oblique rotation, are shown in Exhibit 6.16. As the results show, many significant but not strong correlations have been found between the various management style factors. This indicates that the identified management style factors are mainly autonomous features.

Management Style Factor		Conceptual Thinking	Flexibility & Adaptation	Teamwork & Cooperation	Communi-cation	Analytical Thinking
Conceptual Thinking	*Correlation*	1.000	.128	.214	.295	.039
	Significance		.085	.011	.001	.338
	N	116	116	114	115	115
Flexibility & Adaptation	*Correlation*	.128	1.000	.184	.254	–.125
	Significance	.085		.025	.003	.092
	N	116	116	114	115	115
Teamwork & Cooperation	*Correlation*	.214	.184	1.000	.206	–.072
	Significance	.011	.025		.014	.225
	N	114	114	114	114	113
Communication	*Correlation*	.295	.254	.206	1.000	–.063
	Significance	.001	.003	.014		.251
	N	115	115	114	115	114
Analytical Thinking	*Correlation*	.039	–.125	–.072	–.063	1.000
	Significance	.338	.092	.225	.251	
	N	115	115	113	114	115

Exhibit 6.16: Component correlation matrix of management style factors

In summary, it can be concluded that using the self-constructed questionnaire as a basis for measuring the management styles needed for performance management system use is justified, after making some changes. These changes consist mainly of regrouping some components, while a number of components were excluded from further analysis (by not grouping them under a factor). Consequently, the assumption that the self-constructed questionnaire can be applied to measure the management styles that a manager needs to possess in order to be able to use the performance management system has been proven to be correct.

6.3 SURVEY ANALYSIS

Now that it has been established that the self-constructed questionnaire can be used for measuring the management styles needed for performance management system use, the various hypotheses are tested. This is done by looking at whether correlations exist between the measures of performance management system use, the management styles, and organizational performance.

6.3.1 Correlation Between Performance Management System Use Factors and Management Style Factors

After identifying the performance management system use factors and management style factors, the correlation between the two types of factors was calculated in order to test various hypotheses. To this end, for each performance management system use factor and each

management style factor, a scale was calculated by averaging the underlying components. These scale scores were then correlated with each other.

In Exhibit 6.17, for the performance management system use factors (derived from Exhibit 6.6), the levels of correlation with the various management style factors (derived from Exhibit 6.13) are given. The higher the value of the correlation, the higher the interdependence between the two factors is. For each correlation, the level of significance is given. The research aims at finding correlations with a significance of less than 0.1. In Exhibit 6.17, the significant correlations have been printed in bold on a shaded background.

The correlation matrix shows that there are two significant but weak correlations. This means that hypothesis 1 (Specific management styles are related to specific types of performance management system use) cannot be rejected for two management styles. The first correlation is between the management style Communication and performance management system use for Decision Support, which indicates that there exists a relationship between managers with highly developed communication skills and their use of the performance management system for decision-making purposes. It was expected that this management style would have a relationship with the performance management system use Communication, but not with Decision Support. This means that hypothesis 1e (Management style Communication is related to types of performance management system use Work Integration and Communication) has to be rejected. It could be that managers need to communicate a lot with the stakeholders, who have an interest in the outcome of the decision-making process, and that they use the performance management system to support them in providing the information needed as input for the decision making.

Management Style Factor		**Performance Management System Use Factor**		
		Decision Support	**Work Integration**	**Communication**
Conceptual Thinking	*Correlation*	.071	.034	.029
	Significance	.232	.363	.384
	N	109	108	109
Flexibility & Adaptation	*Correlation*	–.035	.100	–.004
	Significance	.357	.153	.483
	N	109	108	109
Teamwork & Cooperation	*Correlation*	–.098	–.101	–.116
	Significance	.158	.150	.116
	N	107	106	107
Communication	*Correlation*	**.129**	.088	.083
	Significance	**.092**	.185	.197
	N	108	107	108
Analytical Thinking	*Correlation*	.104	.117	**.177**
	Significance	.143	.115	**.034**
	N	108	107	108

Exhibit 6.17: Correlation matrix of performance management system use factors and management style factors (1-tailed)

The second significant correlation is the one between the management style Analytical Thinking and the performance management system use type Communication. This indicates that there is a relationship between managers who are proficient at analytical thinking and their use of the performance management system for sharing information with and communicating their performance to the other team members or their superiors. A possible explanation for this is that people who are analytically inclined need the information from a performance management system to explain their actions to others. This correlation means that hypothesis 1a (Management style Analytical Thinking is related to types of performance management system use Decision Support and Work Integration) has to be rejected because the correlation is with Communication, not with Decision Support or with Work Integration.
The other hypotheses, 1b (Management style Conceptual Thinking is related to types of performance management system use Decision Support and Work Integration), 1c (Management style Flexibility & Adaptation is related to types of performance management system use Decision Support, Work Integration, and Communication) and 1d (Management style Teamwork & Cooperation is related to type of performance management system use Work Integration), are also rejected due to a lack of correlation.

6.3.2 Correlation with Performance of the Organization

Many organizations implement a performance management system because they expect a better performance as a result of good use. As was discussed in the literature overview in Chapter 2, there is a growing body of anecdotal evidence that supports this expectation. This section not only discusses the relationship between the types of performance management system use and organizational performance, but also the relationship between management styles of managers and organizational performance.

To test hypotheses 2 (A manager's use of a performance management system influences organizational performance favorably), 3 (Specific management styles influence organizational performance favorably), and 5 (Management style Teamwork & Cooperation influences organizational performance favorably), the respondents of the survey were asked the following question: "In relation to other comparable organizations or organizational units, how did your unit – in your opinion – rate on each of the following factors during the past year?" The respondents had to answer this question for eight performance components.
Before investigating if there is a correlation between the performance of an organization and the performance management system use factors respectively the management style factors, it was decided to perform a principal component analysis (PCA) on the components regarding the performance of the organizational unit of the respondents. These so-called performance components were put together from several literature sources (Business Intelligence, 1992; Anthony and Govindarajan, 1995; Kaplan and Norton, 1996c, Ashton, 1997). The PCA resulted in two performance factors (Exhibit 6.18).

No.	Performance Component	Performance Factor	
		Productivity	Quality
V9_1	Quantity or amount of work produced	**.333**	.467
V9_5	Attainment of unit productions or service goals	**.785**	–.032
V9_6	Efficiency of unit operations	**.629**	.238
V9_8	Development of revenues (if applicable)	**.814**	–.135
V9_9	Development of profits (if applicable)	**.842**	–.040
V9_2	Quality or accuracy of work produced	.398	**.530**
V9_3	Number of innovations or new ideas introduced	–.356	**.843**
V9_4	Reputation for work excellence	.282	**.638**

Exhibit 6.18: Principal component analysis of performance components: two components extracted, Oblimin rotation with Kaiser normalization, 23 iterations

The analysis results in a two-factor structure with all components loading on both factors. The first performance factor, *Productivity*, consists of components that all load high on this factor and that all have to do with reaching the quantitative goals an organization sets for itself. These are financial (V9_8 and V9_9) and operational (V9_5 and V9_6). Component V9_1, although loading higher on the other factor, has been grouped under PR because, being quantitative, this makes more logical sense.
The second performance factor, *Quality*, consists of components that all load high on this factor and that all have to do with reaching the qualitative goals that an organization sets for itself. This is the quality produced (V9_2 and V9_3) and the quality reputation achieved (V9_4).

After identifying the performance factors, the correlation between these factors and the performance management system use factors, respectively, the management style factors were calculated. To this end, for each performance factor a scale was calculated by averaging the underlying components (unweighted). These scale scores were then correlated with the scale scores for the performance management system use factors (respectively the management style factors). Exhibit 6.19 gives the significant correlations.

The correlation matrix shows that the performance management system use factors are correlated with both performance factors. This indicates that relationships exist between all the types of performance management system use and organizational performance. For example, the manager finds it beneficial to use the performance management system to integrate the work processes efficiently in order to attain the productivity and quality goals. This means that hypothesis 2 (A manager's use of a performance management system influences organizational performance favorably) cannot be rejected.

Performance Factor		Performance Management System Use Factor			Management Style Factor				
		Decision Support	Work Integration	Commu-nication	Conceptual Thinking	Flexibility & Adaptation	Teamwork & Cooperation	Commu-nication	Analytical Thinking
Productivity	*Correlation*	**.151**	**.244**	**.223**	**.245**	.081	**.216**	**.189**	–.038
	Significance	**.099**	**.019**	**.028**	**.015**	.239	**.028**	**.048**	.371
	N	74	73	74	79	79	79	79	79
Quality	*Correlation*	**.169**	**.185**	.099	**.238**	**.196**	.097	**.238**	.007
	Significance	**.041**	**.028**	.155	**.006**	**.019**	.156	**.006**	.472
	N	107	106	107	112	112	111	112	111

Exhibit 6.19: Correlation matrix of performance factors with performance management system use factors and management style factors (1-tailed)

All management style factors are correlated with one or both performance factors. This indicates that relationships exist between the management styles managers possess and the organizational performance they achieve. The management style factors of Conceptual Thinking and Communication are both needed to attain good performance. The management style factors Flexibility & Adaptation and Teamwork & Cooperation are correlated to one performance factor, which indicates that being flexible and adaptive is essential to achieve modernization of tasks, which is needed to achieve higher quality, and that to obtain a higher productivity, a management style focused on intensive teamwork and close cooperation between work units is essential.

The results mean that hypothesis 3 (Specific management styles influence organizational performance favorably) cannot be rejected for four factors. Only Analytical Thinking does not seem to have a relationship with performance. Hypothesis 5 (Management style Teamwork & Cooperation influences organizational performance favorably) cannot be rejected for the performance factor Productivity.

A partial correlation was also performed to test whether performance management system use factors and management style factors independently from each other had a correlation with organizational performance (Exhibit 6.20). The results of the partial correlation show that using a performance management system is more important in achieving better quality than having certain management style factors. An explanation for this result can be given by the proximity literature, which states that factors that are closer to the research component give a better forecast than factors further away, that is, the use of a performance management system is closer to organizational performance than the application of management styles.

Performance Factor		Performance Management System Use Factor			Management Style Factor				
		Decision Support	Work Integration	Commu-nication	Conceptual Thinking	Flexibility & Adaptation	Teamwork & Cooperation	Commu-nication	Analytical Thinking
Productivity	*Correlation*	.123	**.268**	**.282**	**.184**	.029	**.290**	.238	–.134
	Significance	.161	**.014**	**.010**	**.065**	.406	**.008**	.136	.136
	N	65	65	65	67	67	67	67	67
Quality	*Correlation*	**.333**	**.312**	**.305**	.083	.088	.127	**.196**	–.113
	Significance	**.003**	**.005**	**.006**	.248	.237	.149	**.054**	.179
	N	65	65	65	67	67	67	67	67

Exhibit 6.20: Partial correlation matrix of performance factors with performance management system use factors and management style factors (1-tailed)

To test hypothesis 4 (A manager's use of a performance management system influences the level of innovation favorably), component V9_3 (The number of innovations or new ideas introduced) is correlated with the performance management system use and management style factors (Exhibit 6.21).

Performance Component		Performance Management System Use Factor			Management Style Factor				
		Decision Support	Work Integration	Commu-nication	Conceptual Thinking	Flexibility & Adaptation	Teamwork & Cooperation	Communi-cation	Analytical Thinking
V9_3 (The number of innovations or new ideas introduced)	*Correlation*	**.229**	**.250**	.118	**.193**	**.207**	.080	**.202**	.033
	Significance	**.009**	**.005**	.114	**.021**	**.014**	.203	**.017**	.364
	N	107	106	107	112	112	111	112	111

Exhibit 6.21: Correlation matrix of component V9_3 with performance management system use factors and management style factors (1-tailed)

Clear correlations exist between performance management system use factors, management style factors, and innovation. This indicates that there is a relationship between the use of a performance management system and a focus on innovation throughout the whole organization. CSFs and KPIs characteristically focus on nonfinancial data. Innovation per definition is nonfinancial in nature because the financial benefit from new ideas, if any, often can be noticed only after a significant time span. The BSC has a separate perspective, called innovation, which focuses on managers being continuously innovative. Paying attention to innovation in this way, by using performance indicators and the innovation perspective, results in better performance on this aspect. As Kaplan and Norton (2000) state in their latest book: "The learning and growth initiatives are the ultimate drivers of strategic outcomes."

Consequently, hypothesis 4 (A manager's use of a performance management system influences the level of innovation favorably), cannot be rejected. This is an encouraging result, especially because Frigo (2000) found during a large-scale survey of performance management practices that in particular the innovative perspective of the BSC could be significantly improved (Exhibit 6.22). As Adler (1999) remarks: "If there is one major shortcoming with the BSC, it is the often inconsistent set of performance measures that appears under the innovation and learning perspective. It seems often that the performance measures appearing under this perspective could have been placed under the other perspectives as well (or even better)."

BSC Perspective	Poor/Less Than Adequate	Adequate/Good	Very Good/Excellent
Financial	14.0%	50.4%	35.5%
Customer	37.2%	47.9%	14.9%
Internal process	42.9%	48.7%	8.4%
Innovation	53.8%	39.5%	6.7%

Exhibit 6.22: Rating of quality of performance management system, in the four perspectives of the BSC (Frigo, 2000)

Johnston and Fitzgerald (2000) agree with Frigo that managers are still predominantly concerned with financial measures of performance, Return on Capital Employed (ROCE), profit, revenue, share price, and costs. Kröger et al. (1998) found during a survey of top European companies that no matter what respondents said they were trying to achieve, when asked how they were measuring success, the focus was overwhelmingly on cost. A similar observation comes from a recent Hackett study (2000) that found that most organizations' scorecards are far from balanced. Almost three quarters of the performance measures are financial in nature. Adler (1999) even states: "The introduction of nonfinancial performance measures is handicapped by two factors: the general suspicion it invokes in managers and the continued obsession organizations have with financial performance measures." The drawback of this, as Hackett (2000) notes, is that "with a BSC that focuses largely on historical results, companies are certainly missing current or potential problems and opportunities that could be brought to light by also including more internal and external operating measures."

6.3.3 Correlation with Organization Type

In this section, the performance management system use factors are related to the different types of organization. For these analyses, the t-test was used. This test examines the components that have more significance for one group compared to the other group. Beforehand, it was checked if the variance in the two groups was the same, using Levene's test for equality of variances. This appeared to be the case (Exhibit 6.23).

Performance Management System Use Factor	Levene's Test for Equality of Variances (F)	Significance
Decision Support	.001	.972
Work Integration	.132	.717
Communication	.772	.381

Exhibit 6.23: Levene's test for equality of variances for industry type

In Exhibit 6.24, the results are given for the relationship between types of performance management system use and the sector type in which the organization operates.

Performance Management System Use Factor	Sector Type	N	Mean	Standard Deviation	Significance
Decision Support	*Profit*	79	**3.16**	.82	.072
	Nonprofit	31	**2.90**	.85	
Work Integration	*Profit*	78	**3.26**	.90	.055
	Nonprofit	31	**2.94**	.97	
Communication	*Profit*	79	**3.45**	.92	.141
	Nonprofit	31	**3.23**	1.08	

Exhibit 6.24: T-test for performance management system use factors and sector types (1-tailed)

The t-test shows that, in general, profit managers use a performance management system more for decision support and work integration purposes than nonprofit managers do. The difference between the two sectors is not that significant for the communication use. The result means hypothesis 6 (A performance management system is used more often in the profit sector than in the nonprofit sector) cannot be rejected for the performance management system use types Decision Support and Work Integration. As Frigo (2000) describes: "The BSC framework has been gaining support at many companies. Recently, Bain & Company estimated that 55% of the U.S. companies it surveyed and 45% of the European companies use the BSC. According to the IMA performance management system survey, approximately 40% of the respondents are currently using a BSC or plan to within the next year. In the survey, 12% of the companies have been using the BSC for more than two years." Fortunately, the public sector is trying hard to catch up to the profit sector as indicated by an increasing number of articles, reports, and manuals that are specifically written for the nonprofit sector (United States General Accounting Office, 1999; National Academy of Public Administration, 1998; National Partnership for Reinventing Government, 1999).

In Exhibit 6.25, the results are given for the relationship between types of performance management system use and organization type.

Performance Management System Use Factor	Organization Type	N	Mean	Standard Deviation	Significance
Decision Support	*Manufacturing*	69	**3.28**	.77	.001
	Nonmanufacturing	41	**2.76**	.84	
Work Integration	*Manufacturing*	68	**3.40**	.85	.001
	Nonmanufacturing	41	**2.79**	.94	
Communication	*Manufacturing*	69	**3.58**	.87	.004
	Nonmanufacturing	41	**3.05**	1.04	

Exhibit 6.25: T-test for performance management system use factors and organization types (1-tailed)

In general, this t-test shows that production managers use a performance management system more for decision support, work integration, and communication purposes than nonproduction (service, transport) managers do. The result means that hypothesis 7 (A performance management system is used more often in manufacturing companies than in nonmanufacturing companies) cannot be rejected for all three types of performance management system use.

6.4 INTERVIEW RESULTS

In addition to sending out questionnaires, 10 managers from three different organizations were interviewed. The position of these managers varied among chief executive officer (CEO), chief financial officer (CFO), plant manager, and department head. They all were experienced, and had worked quite some time at their organizations, although not necessarily in their latest function. In the interviews, additional information about the organization's performance management system was gathered and the way in which managers used their performance management system was discussed. The management styles of regular and irregular performance management system users were also discussed in more detail with the interviewees.

In general, each interview took about sixty to ninety minutes. During each interview, the same interview list was used. The interviews were conducted by two persons, one asking the questions and the other one making notes and asking clarifying questions. At the end of each interview, it was verified by the interviewers whether the interview had been useful for the interviewee and whether anything had been overlooked. All the interviews were conducted at the interviewees' place of work. Exhibit 6.26 contains the interview list. The remainder of this section gives a summary of the answers most frequently given by the interviewees.

Interview Part	Purpose/Questions
Explain goal of the interview	▪ To obtain information on use of the PM systems (reports) ▪ To obtain information on opinion interviewee about characteristics of good performance management system users
Content of the interview	Further acquaintance: ▪ Clarify the research goals ▪ Explain what will be done with the results ▪ Explain why the research and its results are useful to the organization
	Questions concerning the management report(s): ▪ Which management rapport(s) do you use? ▪ Does this report contain mainly financial or nonfinancial information? Or both? ▪ By whom is the report – apart from yourself – used? ▪ Is the report being used dynamically? In other words, are the performance indicators regularly revised? And, if so, by whom? ▪ How is the IT support for the reports? ▪ With which frequency is the report produced? ▪ What can you tell about the reporting layout? ▪ What are in your opinion the main effects of the report (e.g. more control, higher revenues) ?
	Questions concerning the use of management reports: ▪ In what ways do you generally use the management report(s)? Are you using it for management control, to justify or answer for your decisions, for communicating, or for evaluating projects/employees? ▪ Can you give examples? ▪ Do you experience the use of the management report(s) as useful and/or sensible? Why?
	Questions concerning users of the management report(s): ▪ What qualities should people have – in your opinion – in order to be able to make successful use of the management report(s); one could think of knowledge, skills, attitudes, management style? ▪ Can you give an example?

Exhibit 6.26: Interview list

Summarizing, it can be said that the interviewees indicated they used the performance management system mainly for monitoring the performance and results of their organization; focusing their attention on specific, important issues; formulating and factually supporting decisions and action plans; communicating more effectively; and motivating themselves and others to strive for continuous improvement. According to the interviewees, regular users of a performance management system have the following management styles:

- *They have analytical and conceptual skills* – Managers with this management style are able to identify the key points and see the cause–and–effect relationships. They also have an "integral view of the business process". They are able to process information quickly and effectively and to link leading with lagging indicators.
- *They have content knowledge* – Managers with this management style have clear insight into the objectives and goals of their organization and their business unit. They also have a clear overview of the processes, products/services, trends, results, and consequences of these results.
- *They have communication skills* – Managers with this management style are able to listen and are proficient at asking questions. They can also place themselves in someone else's position.
- *They are good managers/coaches* – Managers with this management style set an example to employees and fellow managers by using the performance management system often and visibly. They also motivate and support their employees in using the performance management system and continuously look for improvement opportunities.
- *They are able to delegate* – Managers with this management style give employees enough freedom of action and rely on the skills and insights of these people.
- *They are good "time managers" and set priorities well* – Managers with this management style are proactive and focused in the sense that they decide and act on their priorities on the basis of the information of the performance management system, instead of being incapacitated by information overload.
- *They have vision and guts* – Managers with this management style are not afraid to break with the old ways of working and are open for change and new solutions.

If the answers given during the interviews are compared with the results from the correlation matrices (Exhibits 6.17 and 6.19), it turns out that some correlations are supported and others are not. Most of the mentioned skills and management styles were analytical and conceptual, which, according to the interviewees, are essential to be able to use a performance management system regularly. However, the theory and correlation matrix of Exhibit 6.17 only partially supports this opinion. A possible explanation for this discrepancy is that any manager needs analytical and conceptual skills to do the job properly and, therefore, these management styles are not specific for a regular or irregular performance management system user. This explanation is supported by the findings in the correlation matrix of Exhibit 6.19, which shows that respondents indicated that the management styles Conceptual Thinking and Flexibility & Adaptation are important for obtaining performance goals.
Many of the other skills mentioned during the interviews can more or less be seen in the light of a communicative manager. Delegation and time management skills as well as vision and guts are all essential to function properly in the turbulent environment in which modern managers operate.

6.5 DISCUSSION OF PHASE II RESULTS

Phase II started with drafting a causal flow model (see Exhibit 5.5), from which several hypotheses were derived about the management styles that a manager should have to be(come) a regular applier of certain types of performance management system use. By grouping the hypotheses that after testing could not be rejected, answers can be found on the research questions of phase II: *Which management styles are related to which types of performance management system use?* and *Do specific management styles and types of performance management system use have an effect on organizational performance?*

First, managers who are proficient in communication use a performance management system especially for decision support. Managers who are proficient in analytical thinking use a performance management system mainly for communication. Second, this use of a performance management system (for decision support, work integration, and communication) influences organizational performance favorably, especially the level of innovation. Finally, certain management styles (Conceptual Thinking, Flexibility & Adaptation, Teamwork & Cooperation, and Communication) also influence organizational performance favorably.

In conclusion, it can be stated that the assumption made after the analysis of phase I of the research – namely, that the factor of management styles of the controlled system (a manager) can play an important role in the successful implementation and regular use of a performance management system – proved to be a well-founded one. Linking the results of phase I (see Exhibit 4.28) with those of phase II gives the following overview of the areas to which organizations have to pay special attention during implementation of a new performance management system in order to increase the chance of implementing a performance management system that will be regularly used (Exhibit 6.27):

Classification Scheme Part	**Areas of Attention to Obtain a Regularly Used Performance Management System**	**Behavioral Factors and Management Style factors**
Performance management system	**Managers' understanding –** *A good understanding by managers of the nature of performance management*	D4. Managers understand the meaning of KPIs. D7. Managers have insight into the relationship between business processes and CSFs/KPIs. U7. Managers' frames of reference contain similar KPIs. U21. Managers agree on changes in the CSF/KPI set.
	Managers' management styles – *Management styles and related behaviors managers need to have to be(come) regular users of a performance management system*	CO. Proficiency at communication, for using a performance management system for decision support purposes. AT. Proficiency at analytical thinking, for using a performance management system for communication purposes.

Classification Scheme Part	Areas of Attention to Obtain a Regularly Used Performance Management System	Behavioral Factors and Management Style factors
Controlled system	**Managers' attitude –** *A positive attitude of managers toward performance management, toward a performance management system and toward the project*	S2. Managers agree on the starting time. S4. Managers have earlier (positive) experiences with performance management. U13. Managers realize the importance of CSFs/KPIs/BSC to their performance. U14. Managers do not experience CSFs/KPIs/BSC as threatening.
Controlling system	**Performance management system alignment –** *A good match between managers' responsibilities and the performance management system*	D9. Managers' KPI sets are aligned with their responsibility areas. D13. Managers can influence the KPIs assigned to them. U9. Managers are involved in making analyses. U15. Managers can use their CSFs/KPIs/BSC for managing their employees.
Internal environment	**Organizational culture –** *An organizational culture focused on using the performance management system to improve*	U13. Managers' results on CSFs/KPIs/BSC are openly communicated. U27. Managers are stimulated to improve their performance. U8. Managers trust the performance information. U17. Managers clearly see the promoter using the performance management system.
	Managers' management styles – *Management styles and related behaviors managers need to have to support organizational performance*	CO. Proficiency at communication, to obtain productivity and quality goals. CT. Proficiency at conceptual thinking, to obtain productivity and quality goals. FA. Proficiency at flexibility and adaptation, to obtain quality goals. TC. Proficiency at teamwork and cooperation, to obtain productivity goals.
External environment	**Performance management system focus –** *A clear focus of the performance management system on internal management and control*	D16. Managers find the performance management system relevant because it has a clear internal control purpose. D17. Managers find the performance management system relevant because only those stakeholders interests are incorporated that are important to the organization's success.

Exhibit 6.27: Overview of behavioral factors and management style factors, important to implementation of a regularly used performance management system

The results of phase I (see Exhibit 4.29) and phase II can also be combined to group the least important behavioral factors and management styles together in categories, in such a way that an overview appears of the areas an organization does not have to pay special attention to when implementing a new performance management system (Exhibit 6.28).

Classification Scheme Part	**Areas of Least Attention to Obtain a Regularly Used Performance Management System**	**Behavioral Factors and Management Style factor s**
Performance management system	**Managers' involvement –** *Direct involvement of managers in developing the new performance management system*	S3. Managers have been involved in decision making about the project starting time. D1. Managers have an active role during the development stage of the performance management system project. D2. Managers are informed about the status of the performance management system project. D3. Managers are actively communicating about the performance management system project. D5. Managers are involved in defining KPIs. D8. Managers are involved in setting KPI targets. D10. Managers are involved in making the CSF/KPI/BSC report layout. D11. Managers understand the CSF/KPI/BSC reporting.
	Managers' management styles – *Management styles and related behaviors managers need to have to be(come) regular users of a performance management system*	CO. Managers do not seem to need a proficiency for communication (when using a performance management system for work integration and communication purposes). CT. Managers do not seem to need a proficiency for conceptual thinking (when using a performance management system for decision support, work integration or communication purposes). AT. Managers do not seem to need a proficiency for analytical thinking (when using a performance management system for decision support and work integration purposes). FA. Managers do not seem to need a proficiency for flexibility and adaptation (when using a performance management system for decision support, work integration or communication purposes). TC. Managers do not seem to need a proficiency for teamwork and cooperation (when using a performance management system for decision support, work integration or communication purposes).

Classification Scheme Part	Areas of Least Attention to Obtain a Regularly Used Performance Management System	Behavioral Factors and Management Style factor s
Controlled system		-
Controlling system		D14. Managers accept the promoter. U16. Managers have sole responsibility for a KPI.
Internal environment	**Managers' management styles –** *Management styles and related behaviors managers need to have to support organizational performance*	AT. Managers do not seem to need a proficiency for analytical thinking (to obtain productivity and quality goals). FA. Managers do not seem to need a proficiency for flexibility and adaptation (to obtain productivity goals). TC. Managers do not seem to need a proficiency for teamwork and cooperation (to obtain productivity goals).
External environment		-

Exhibit 6.28: Overview of behavioral factors and management style factors, least important to implementation of a regularly used performance management system

7 Conclusion and Discussion

In this chapter, a summary is given of the research described in this dissertation. In addition, possible inadequacies in the research and opportunities for further study are discussed.

7.1 SUMMARY OF RESEARCH

7.1.1 Introduction to the Study

Performance management systems are defined as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities" (adapted from Simons, 2000). These systems focus on conveying financial and nonfinancial information that influence decision making and managerial action. The recording, analyzing, and distributing of this information is embedded in the rhythm of the organization and is often based on predetermined practices at preset times in the business cycle. These systems are designed specifically to be used by managers. According to Neely (2000), there is a natural evolutionary cycle at work in the development of theory and practice in the field of performance measurement and control systems. During this cycle, managers were first concerned that they were measuring the wrong things (late 1980s and early 1990s). After struggling with the adoptation of new and alternative systems, like the balanced scorecard (throughout the 1990s), they now turn to the issue of how to use the data provided by these new systems (late 1990s and early 2000s). Zairi and Jarrar (2000) state that the main reason for managers to use data from the performance management system is to influence the behavior of subordinate managers and employees. To do so successfully, these managers need a clear view of human nature and behavior in organizations. Simons (2000) gives several assumptions about the nature of human activity in organizations: (1) people in organizations want to contribute to an organization of which they can be proud of; (2) people employed by business organizations also know the difference between right and wrong, and generally choose to do right; (3) people strive to achieve – even in the absence of external inducements (money, promotion, praise) people often set a personal goal for themselves; (4) people like to innovate – they have an innate desire to experiment by creating new technologies and new ways of doing things; and (5) people want to do competent work, a job well done allows them to exercise their skills and receive satisfaction from their competence. Simons concludes that people like to have and show good performance.

Performance can be considered an outcome of both organizational and human activities. Originally, performance measures were used as surrogates for these outcomes, and a direct link between performance management systems, human nature, and outcomes was not made. This omission was addressed by Argyris (1952)[10] and later on by Simon et al. (1954). They explored the human behavioral side of performance management system use, looking specifi-

[10] Vagneur, K. and M. Peiperl (2000), "Reconsidering performance evaluative style", *Accounting, Organisations, and Society*, 25, referring to: Argyris, C. (1952),*The impact of budgets on people*, The Controllership Foundation, Cornell University

cally at the budgeting system. Both concluded that budgets and budgeting processes could be associated with important human relation problems. These included worker–management separation, cross-boundary conflict, and job-related tension. Their conclusions were substantial departures from the mechanistic approach to performance measurement found in traditional management theory.

Nowadays, the issue of the "human element" receives more than before attention in the literature. Simons (2000) states that performance measurement and control systems cannot be designed without taking into account human behavior. Holloway et al. (1995) argue that successful implementation of performance measurement depends above all on understanding and accommodating the human element. A closer look at the literature reveals that a lot of this attention for the human element seems to be still focused on its relationship to the budgeting system. In this respect, Hartmann (2000) remarks that it should be investigated whether personality factors related to individual preferences for risk and uncertainty are important determinants of managerial behavior and attitudinal reactions to budgeting. And Vagneur and Peiperl (2000) state that individual psychological responses to performance assessment should be investigated, taking into account research from the fields of psychology, organizational behavior, behavioral accounting, and systems theory. Next to this, a lot of performance management research focused on the technicalities of implementing a performance management system rather than on behavioral issues (Martins, 2000). In recent years, an increasing number of organizations have implemented performance management systems that are based on critical success factors (CSFs) and key performance indicators (KPIs). A frequently used format in this context is the balanced scorecard (BSC) (Kaplan and Norton, 1996). Despite the increase in experience gained with these systems, there is still a lot to be learned about the factors that influence effective use of CSFs, KPIs, and the BSC (Vosselman, 1999). The influence of users' characteristics on the use of a performance management system has been underexposed in scientific and professional literature (Vagneur and Peiperl, 2000; Krause, 2000).
Two recent studies into the behavioral aspects of performance management system implementation and performance management system use aim at filling this void. Lipe and Salterio (2000) found that managers' cognitive limitations may prevent organizations to fully benefit from a performance management system, and that cognitive differences between managers may lead them to use the performance management system differently. Malina and Selto (2000) found that positive outcomes from performance management system use were mostly determined by the effectiveness by which the system is used as a management control device (defined in terms of effective measurement, comprehensive performance, and weight of the measurement dimensions), while these outcomes were not attributable to its use as a communication device. Positive outcomes are generated by better strategic alignment of employees and better motivation, which indicates that causal relationships exist between performance management system design, management control use, managerial and employee behavior, and performance.

In this dissertation the line of research into the behavioral aspects of performance management system implementation and use is extended by addressing the research question *Which behavioral factors contribute to the successful implementation and use of a performance management system?* A performance management system is regarded successful if managers use the system on a daily basis. The research question is answered by studying three organizations that have designed and implemented a performance management system. The research aims to identify the behavioral factors that are responsible for the successful design and implementation of a performance management system. In scientific and professional literature, many suggestions

for these behavioral factors have been made. Examples are: "Managers accept the need for performance management" and "Managers accept the promoter".

An important part of the PhD research was, in addition to an extensive literature study, conducting case study research. Visits were paid to three companies that had experience with CSFs, KPIs, and the BSC to find answers to the following questions:

- Why did the company introduce a performance management system based on CSFs, KPIs, and the BSC?
- Under which circumstances did the company decide to introduce the performance management system?
- How did the company involve its employees during the development phase of the performance management system?
- What are the experiences of users with the newly developed performance management system and the CSFs, KPIs, and BSC?
- What communication methods were used to introduce the performance management system?
- How has the accountability for the indicators in the performance management system been put in place?

7.1.2 Results of Phase I

The scientific and professional literature studied mentions many behavioral factors that are potentially important to successful implementation and regular use of a performance management system. These factors have been grouped and arranged in a classification scheme (Exhibit 7.1).

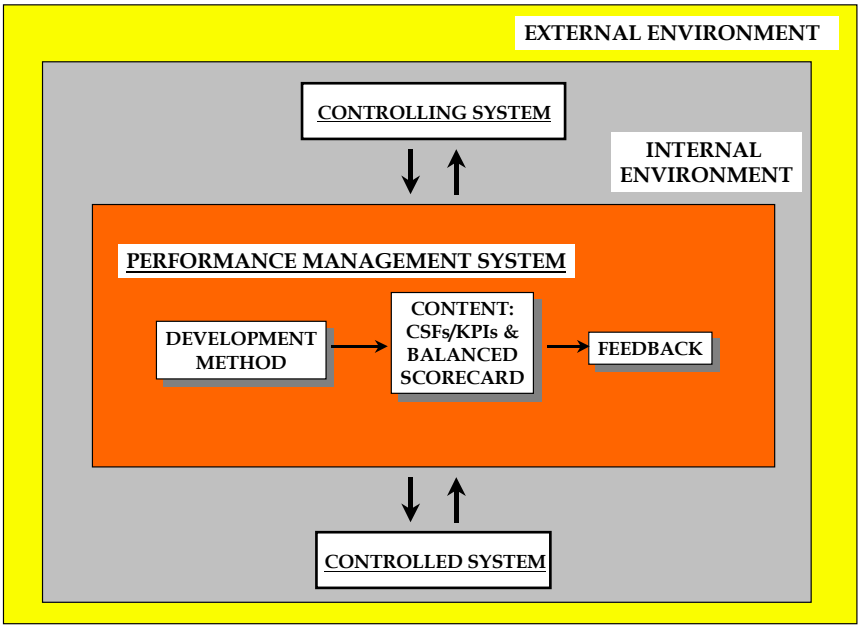


Exhibit 7.1: Classification scheme of behavioral factors

This classification scheme was developed by linking the factors of effective control as given by De Leeuw (1990) with the control cycle of performance measurement as given by Van Tuijl et al. (1995). For effective control, the controlling system (the superior of a manager) and the controlled system (the manager) need a performance management system. Through the performance management system, the controlling system gets information about the performance of the controlled system and the controlled system obtains information about its own performance. The internal and external environments in which the controlling and controlled systems operate also influence the effectiveness of control. In the performance management system, the development method part describes the way in which CSFs, KPIs, and the BSC are developed. The content part gives the quality criteria that CSFs, KPIs, and the BSC have to meet in order to be relevant to both controlling and controlled system. The feedback part describes the way in which information about CSFs, KPIs, and the BSC is conveyed to both controlling and controlled system. Each part of the classification scheme can be divided into subparts. For each subpart, behavioral factors can be found in the literature, so that it can become clear how each part of the classification scheme can be influenced favorably.

To answer the research question, case study research was conducted at three Dutch organizations: a nonprofit organization, a profit company, and an organization in transition from nonprofit to profit. All organizations had, at the time of the research, extensive experience with CSFs and KPIs. The purpose of the case study research was to identify the behavioral factors that are the most important to the implementation and regular use of the performance management system at those organizations. Generally, in a performance management system implementation project, three stages can be distinguished: (1) the *starting* stage, in which the organization decides to implement a performance management system; (2) the *development* stage, in which CSFs, KPIs, and the BSC are developed; and (3) the *use* stage, in which the organization starts to use the performance management system. In each stage, identification took place of those behavioral factors that were the most important to a positive end result of that stage and the overall project. In addition, the stage that was the most important to the overall success of the project was identified.
The research results indicated that special attention should be paid to 18 specific behavioral factors. In addition, the use stage turned out to be the most important to the success of the performance management system. For the starting and development stages, such a clear relationship was not found. This does not mean that, during these stages, an organization should not pay attention to the behavioral factors that are important to these stages. The three stages are executed sequentially, which means that the first two stages must be executed properly before the use stage can be started. The fact that the use stage contributes most to the success of a performance management system may be explained by the fact that this stage is, in contrast to the starting and development stages, a continuous stage. The consequence of this is that the behavioral factors that are important to the use stage have to be monitored continuously to ensure regular use of the performance management system. In contrast, the attention for behavioral factors that are important to the starting and development stages lies in the past and therefore becomes less significant and visible through time.

In one of the case studies, two comparable departments in one organization were studied. The results for the starting and development stages were identical for both departments. However, the results for the use stage were positive for one department and negative for the other. The case material strongly suggested that the attitude of the head of the department (the controlled system) toward the performance management system was the decisive factor for this difference in result. The lack of emphasis on performance management of the one manager versus the specific focus on performance management of the other manager indicated that

how a manager views performance management is important. These differences in viewpoints could be explained by differences in management styles of the managers in question. This corresponds with the findings of Malina and Selto (2000) as well as Lipe and Salterio (2000). As the aspects of cognitive and interpersonal abilities of managers and types of performance management system use were not explicitly taken into account during phase I of this study, it was decided to start a second research phase, which aimed at studying the relationship between performance management system use and management styles. Phase I focused on the organization and its situation and strategy, which are all short term aspects. Phase II focused on personal characteristics of individuals in different settings (organizations), which are long term aspects.

7.1.3 Results of Phase II

The challenge in phase II was to identify those management styles that are important to regular use of a performance management system (Marchand et al., 2000; Gelderman, 1998d). Based on the literature, specific types of performance management system use were identified and several hypotheses were drafted about management styles that could be important. These hypotheses were tested at 11organizations by means of a self-constructed questionnaire. From the number of hypotheses that could not be rejected, it can be concluded that specific management styles are indeed important to certain types of performance management system use, although not always in the manner the literature predicts. The results also indicate that the use of a performance management system raises the productivity and the overall quality of an organization; that one specific management style, namely that of being flexible and adapting easily to different organizational circumstances, increases the quality of the work delivered; and that the management style of teamwork and cooperation increases the productivity. Differences in types of performance management system use and in managerial performance may thus (at least partly) be explained by differences in management styles of managers. In the words of De Smet et al. (2001): "The manager indeed makes a difference!" The implication is that further research into management styles of managers is recommended to strengthen the application of certain types of performance management system use and to improve organizational results.

7.2 DISCUSSION OF PHASE I

The aim of the research was to identify behavioral factors that are important to the successful implementation and regular use of a performance management system. Initially, the research concentrated on identifying behavioral factors that the literature indicated as being of influence on successful performance management system use. To keep the scope of the research manageable, a selection was made of the development methods and related behavioral factors that were mentioned in the literature. Consequently, potentially influential methods and factors may thus erroneously have been left out of the study.
For the identification of the behavioral factors, only literature on applied research that included case studies was used as a source for the factors. As a result, potentially important factors that were only mentioned in scientific and professional literature without case studies have not been included in this study.

The research departed from the assumption that attention for behavioral factors always has a favorable influence on the success of a performance management system. The degree of influ-

ence (e.g. positive or negative, stronger or weaker) of other factors, such as environmental or organizational factors, has not been investigated. This means that, although the research shows that behavioral factors have indeed an influence on successful implementation and regular use, other factors may have a greater influence and may therefore be more important.

Measuring performance is never easy, but as Gelderman (1998d) remarks, in this case the situation is even worse. The characteristics of a performance management system not only influence performance, but may also be influenced by performance. Furthermore, the relationship between the measures used to assess performance management system use and the measures used to assess organizational performance may influence the results. That is why further research into the nature and number of the criteria for regular use may yield a better set of criteria.

The behavioral factors were identified by means of case study research. Only three organizations have been investigated, which means that, had more cases been included in the research, the results might have been different. Although different types of organizations were examined, including more cases may bring out differences between different types of organizations. The research did not look at the influence of other management control and information systems (including those not based on CSFs, KPIs, and the BSC). Including these can shed more light on the importance of behavioral factors for these systems.

Phase I did not focus on the information technology (IT) systems that are used in generating management reporting. CSFs, KPIs, and the BSC are increasingly reported by means of IT systems, like EIS. The study did not investigate whether the type of EIS influenced the human elements or vice versa. This was because at the time of the research it was expected that, as predicted by several researchers (McAuliffe and Shamlin, 1992; Inmon et al., 1998), most managers still used paper reporting.
In addition, no distinction was made between different types of organization, like profit or nonprofit, large or small, and manufacturing or service-oriented organizations. This was done because CSFs, KPIs, and the BSC are considered to be widely applicable in all types of sectors and organizations.
No attention was paid in phase I to the different strategies of organizations or whether these were the right strategies for those organizations. This was done because the field of strategic management contains such a large body of literature that even Mintzberg et al. (1998) could only with difficulty limit it to ten schools of thought. Researching all ten schools in relation with the use of CSFs and KPIs would distract too much from the initial study objective. The research only looked at whether organizations used CSFs and KPIs to measure and monitor their strategies.

Phase I was limited to the use of CSFs, KPIs, and the BSC in relation to internal reporting, such as reporting the results of the organization to its managers for managing and control purposes. The research did not look at the use of CSFs, KPIs, and the BSC in external reporting to external stakeholders, like shareholders, banks, and governmental agencies. This was done for two reasons. First, nonfinancial indicators are still hardly used in external reporting (Hers, 1997). Second, the study was interested in the behavioral factors that come into play during the use of reporting in the management of organizational activities.

Finally, no personal characteristics of managers, like age, experience, function, mental model, management styles, skills, and experience, were taken into account. The thought behind this was twofold: limiting the research to behavioral factors would yield enough interesting

results; and including personal characteristics would require delving (deeper) into psychological, social, and behavioral literature, which would have lengthened the research time considerably. However, the results from phase I showed the study scope needed broadening, so additional research into some personal characteristics of managers was required. For this reason, a second phase, which focused on management styles, was started.

7.3 DISCUSSION OF PHASE II

Many of the correlations found in phase II are not very strong, especially those between performance management system use factors and management style factors. This in itself is not very surprising, given the nature of exploratory research in which managers have to give their own opinion. These managers may not be objective, have a bad day, or have been distracted at the time of filling in the questionnaire. These may all be causes for distortion of the results. Other possibly important influences, like the particular circumstances of the surveyed organizations, have been left out of the research. Due to this, aspects of situational leadership have not specifically been examined (Goedmakers et al., 1994). These circumstances can influence the management style of a regular user of a performance management system. In addition, the control situation at an organization can be so strong that, according to the situational constraints, managers do not get the chance to express individual management styles and thus these styles are suppressed (Kanfer, 1994).
Fiedler (1967) states that the effectiveness of a group also depends on the attitude of the manager toward the "least preferred co-worker". This phenomenon has not been included in the research and could also be of influence.
Another reason for the weak correlations could be either that the questionnaire was not thorough enough or that the research population was not suitable for testing the questionnaire. For instance, there may be more factors
– other than the ones mentioned in the causal flow model (Exhibit 5.5) – that influence the reasons a manager has for using a performance management system or that influence job behavior and organizational performance.

7.4 POSSIBILITIES FOR FURTHER STUDY

With respect to phase I, a potentially worthwhile avenue of further study is to look at the behavioral factors that have been excluded from the initial study (see Appendix B). Further research is also needed into other factors, such as environmental or organizational factors. This research may yield factors that are of great(er) importance to successful implementation and use of a performance management system than the behavioral factors identified in this study. If more case study organizations are included in a study, a greater degree of generalization could be achieved.

The results of phase I show that the use stage is the most important to the success of the performance management system. This means that further study should concentrate on this stage in order to discover (further) reasons why organizations do not use a newly implemented performance management system. Research is also needed into a "maintenance" system that makes sure that organizations, and its managers, continue to pay attention to the behavioral factors after the performance management system is put into use in order to make sure that the performance management system remains a success. As the organizations examined in phase I of the study did not yet dispose of a reward system that was linked to the

performance management system, further study should pay special attention to the role of the reward system in the maintenance system.

With respect to phase II, additional research is essential to verify the analyses given in this study. This could be done by obtaining more filled-in, valid questionnaires. It would be useful to test with a new research sample whether the performance management system use factors can be broken down in a larger number of separate, independent factors.
In addition, because a self-constructed questionnaire to study management styles was used, additional research is required to find out whether all relevant management styles were included in this questionnaire. The factor analyses should be performed on a new sample to test whether the management styles can become more stable (thereby yielding a higher Cronbach's α). It is also useful to include more organizational types, such as more nonprofit organizations, more national organizations, and smaller organizations, to be able to identify potentially significant differences in types of performance management system use and in management styles.

Further research is also possible into the locus of control of managers. Locus of control is defined as the tendency of a person to attribute outcomes to internal or external causes (Gelderman, 1998d). The relationship between locus of control and specific types of performance management system use could be very interesting in predicting the frequency of performance management system use.
Finally, further study into the psychological aspects of performance management system use and management styles is needed to discover reasons why managers with certain management styles use the performance management system for certain types of use and not for other types of use.

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Appendices

APPENDIX A: IDENTIFICATION OF CLASSIFICATION SCHEME SUBPARTS

The classification scheme is compiled of elements that are derived from a multitude of methods, described particularly in literature on applied research, for developing a performance management system based on CSFs, KPI, and the BSC. Similar elements are grouped under one subpart. For each development method an X denotes whether a particular element is represented in that method.
In the matrix, a broad definition of the terms CSFs and KPIs has been used. This means that also development methods have been included that refer to crucial indicators (Wijn et al., 1996), early warning signals (Hahn and Krystek,1979), critical assumption set (Stam and Tossaint, 1996) or strategic indicators. For an overview of alternative terms that are used in strategic literature for CSFs and KPIs, see Krijnen and Geven (1991).

Not all development methods described in the literature were included. Criteria for inclusion were: the development method is comprehensive and described in detail, providing many significant elements; preconditions for implementation and do's & don'ts during implementation and use of the performance management system are given; the development method has a good theoretical foundation, building on previous literature; and the development method is illustrated with case studies, which indicates that the method has actually been applied at organizations.

The methods, included in Exhibit A, are:

1. Rockart (1979) – CSFs and prime measures.
2. Hahn and Krystek (1979) – The Early Warning System.
3. Munro and Wheeler (1980) – CSFs and KPIs.
4. Jenster (1987) – CSFs and KPIs.
5. Freund (1988) – CSFs and KPIs.
6. Du Mée (1991a) – CSFs and KPIs, in an Early Warning System.
7. Van Nijhuis and Van Snellenberg (1993) – CSFs and KPIs.
8. Hronec (1993) – Quantum Performance Measurement Matrix.
9. Kerklaan et al. (1994) – The Management Cockpit.
10. Thor (1994) – Family of Measures.
11. Vitale et al. (1994) – Strategic Measurement System.
12. Kleingeld (1994) – Productivity Measurement and Enhancement System (ProMES).
13. Simons (1995) – Levers of Control.
14. Croonen and Oud (1996) – Performance steering.
15. Van Gerwen et al. (1996) – Performance Management.
16. Neely et al. (1996) – CSFs and KPIs.
17. Van Harten (1996) – Indicators.
18. Kaplan and Norton (1996a) – The BSC.

Classification Scheme Part	Development Method																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Performance management system – Development method																		
Development method				X				X			X	X		X	X	X	X	X
Performance management system – Content																		
Quality	X	X		X		X	X	X	X	X	X	X	X	X		X		X
Registration	X	X	X	X		X	X		X	X	X					X	X	
Purpose	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Targets		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Balance	X							X		X					X	X		X
Performance management system – Feedback																		
Feedback (reporting)	X			X	X	X	X	X	X	X		X	X	X	X	X	X	X
Feed forward (prognosis)			X						X		X		X			X	X	
Controlled system																		
Management level					X		X	X		X					X	X		X
Management style			X						X	X								
Controlling system																		
Accountability				X						X		X	X	X			X	
Supervision				X							X			X				X
Relationship with controlled system													X		X			X
Internal environment																		
Alignment			X	X	X			X		X	X				X	X		X
Organizational culture							X			X	X		X	X	X			
External environment																		
External environment	X			X	X	X	X				X		X			X	X	X
Inclusion condition																		
Literature	X	X	X	X		X		X	X	X		X	X	X			X	X
Case studies			X		X	X	X	X	X			X	X	X		X	X	X
Do's & don'ts							X							X				
Preconditions								X				X						

Exhibit A: Overview of classification scheme subparts derived from the examined development methods

No development methods after 1996 have been included in Exhibit A. The reason for this is that most of the methods described in the literature after 1996 are either variations or refinements of the original development method based on the BSC – as described by Kaplan and Norton (1992, 1993) – which do *not* add additional value for the purpose of detailing the classification scheme.

APPENDIX B: OVERVIEW OF BEHAVIORAL FACTORS

This appendix contains an overview of all the behavioral factors that were identified on the basis of the literature examined. A selection was made from these factors, to keep the scope of the case study research manageable. The selection criteria for the factors to be researched were:

- *The behavioral factor was mentioned in more than 25% of the literature sources*. The behavioral factors were mainly identified from literature on applied research that contained case studies. The reason for this was that factors mentioned in case studies are likely to be most relevant, because their importance has been observed in practice. The assumption for the selection was that the more a behavioral factor was mentioned in the literature, the more important it may be for successful implementation and use of the performance management system.

- *All subparts of the classification scheme were covered*. Based on the 25% rule, not all subparts contained behavioral factors. This means that, although on the basis of literature on applied research separate subparts can be distinguished in the classification scheme, the literature is not univocal about specific behavioral factors for these subparts. To make sure the complete classification scheme would be covered during the case study research, for these subparts behavioral factors that were mentioned *less* than 25% in the literature, were selected after all.

- *The behavioral factor was deemed interesting by the researchers*. These factors were mentioned in less than 25% of the literature sources but could be, according to the researchers, interesting because they had been previously observed during implementation projects in which the researchers were involved.

The behavioral factors that satisfied one of the three criteria mentioned above are denoted with an X in the following table. The factors are derived from the following 60 literature sources:

Algera (1990); Algera et al. (1992); Alston (1995); Ammons (1995); Andriesse (1996); Ashton (1997); Bonnet and Krens (1994); Bossert and Roozen (1995); Brancato (1995); Ten Broek (1996); Broen et al. (1995); Bruggink (1992); Bruijn (1994); Business Intelligence Research (1992); Compeer (1996); Von Cotta-Schønberg (1995); Croonen and Oud (1996); Dekkers (1996); Eccles and Pyburn (1992); Economist Intelligence Unit (1994); Fisher (1992); Flens (1996); Fortuin (1994); Gerritsen and Blokhuis (1995); Ghobadian and Ashworth (1994); Grimberg (1994); Harten (1996); Van Helden (1991); Van Helden and Jansen (1996); Hiemstra (1995); Hoogers and Neef (1996); Jägers (1996); Janssen (1996); Kampfraath and Mast (1992); Kaplan and Norton (1996a); Kat and Brinkman (1995); Kerklaan et al. (1994); Lewy (1997); Likierman (1994); Van Looij (1996); Mastenbroek (1992); Du Mée (1991a, 1991b); Meekings (1995); Platform Beleidsanalyse (1995); Public Management (1994); Public Sector Committee of the International Federation of Accountants (1996); Rupke (1996); Schoonen (1993); Smeets (1996); Smits (1994); Van Snellenberg (1995); Stam and Tossaint (1996); Torremans (1993); Van Tuijl

(1994); Van Tuijl et al. (1995); Twijnstra Gudde Management Consultants (1995); De With and Van der Woerd (1996); Wijn et al. (1995); Young and Wiltshire (1996).

Behavioral Factor	Number of Sources	Percentage of Total Sources	Selection Criteria: >= 25%	Selection Criteria: Coverage/ Interesting
Performance Management System – Development Method				
Managers have an active role during the development stage of the performance management system project.	30	50	X	
Managers accept the need for performance management.	15	25	X	
Managers receive enough training.	14	24		
Managers are informed about the status of the performance management system project.	13	22		X
Managers are actively communicating about the performance management system project.	13	22		X
There is first a pilot, so managers can see the benefits.	12	20		
Managers see visible results from the new performance management system.	10	17		
There is a phased approach, so managers are not overwhelmed.	9	15		
The project team contains managers from different disciplines.	9	15		
Managers from top and bottom participate (top-down/bottom-up approach).	8	13		
Managers get enough habituation time.	7	12		
Managers receive external support.	4	7		
Expectations of managers are managed.	3	5		
Managers agree on the starting time.	1	2		X
Managers have been involved in decision making about the project starting time.	1	2		X
Performance Management System – Content: Quality				
Managers understand the meaning of KPIs.	20	33	X	
Managers are involved in defining KPIs.	20	33	X	
Managers have insight into the relationship between KPIs and financial results.	16	27	X	
Managers accept the validity of the KPIs.	14	23		
Managers are able to quantify the KPIs.	14	23		
Performance Management System – Content: Registration				
Managers do not get discouraged by the collection of performance data.	18	30	X	
Managers consider the CSF/KPI reporting to be cost effective.	13	22		

Behavioral Factor	Number of Sources	Percentage of Total Sources	Selection Criteria: >= 25%	Selection Criteria: Coverage/ Interesting
Performance Management System – Content: Purpose				
Managers have insight into the relationship between strategy and CSFs/KPIs.	36	60	X	
Managers have insight into the relationship between business processes and CSFs/KPIs.	14	23		X
Managers communicate about the strategy.	10	17		
Managers have insight into the relationship between temporary conditions and CSFs/KPIs.	1	2		
Performance Management System – Content: Targets				
Managers are involved in setting KPI targets.	20	33	X	
Managers understand the basis for the targets.	14	23		
Managers consider the targets to be challenging.	13	22		
Managers consider the targets to be specific.	7	12		
Performance Management System – Content: Balance				
Managers' KPI sets are aligned with their responsibility areas.	25	42	X	
Managers have insight into the relationship between cause and effect.	25	42	X	
Managers have a limited number of KPIs.	8	13		
Performance Management System – Feedback: Feed Forward				
Managers' activities are supported by KPIs.	13	22		X
Managers' frames of reference contain similar KPIs.	7	12		X
Managers are involved in forecasting.	6	10		X
Managers trust good-quality forecasts.	6	10		X
Managers see the causality between the KPIs.	4	7		
Performance Management System – Feedback: Feedback				
Managers are involved in making the CSF/KPI/BSC reporting layout.	23	38	X	
Managers understand the CSF/KPI/BSC reporting.	23	38	X	
Managers trust the performance information.	19	32	X	
Managers receive the information timely.	10	17		
Managers report data with support of information systems.	7	12		
Managers are involved in making analyses.	6	10		X
Managers trust good-quality analyses.	6	10		X
Managers have the KPIs at their disposal.	5	8		
Managers find the KPIs to be specific.	4	7		
Managers give and receive positive feedback.	3	5		

Behavioral Factor	Number of Sources	Percentage of Total Sources	Selection Criteria: >= 25%	Selection Criteria: Coverage/ Interesting
Controlled System – Management Level				
Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	15	25	X	
Managers have enough time to work with their CSFs/KPIs/BSC.	15	25	X	
Manager use the CSFs/KPIs/BSC that match their responsibility areas.	14	23		X
Controlled System – Management Style				
Managers have earlier (positive) experiences with performance management.	13	22		X
Managers realize the importance of CSFs/KPIs/BSC to their performance.	13	22		X
Managers do not experience CSFs/KPIs/BSC as threatening.	13	22		X
Managers can use their CSFs/KPIs/BSC for managing their employees.	13	22		X
Managers make use of several styles.	9	15		
Managers have a positive attitude toward the source of the information.	3	5		
Controlling System – Responsibility				
Managers can influence the KPIs assigned to them.	20	33	X	
Managers have sole responsibility for a KPI.	20	33	X	
Managers can influence the information.	14	23		
Controlling System – Supervision				
Managers accept the promoter.	33	55	X	
Managers see the promoter spends enough time on the performance management system implementation.	33	55	X	
Managers clearly see the promoter using the performance management system.	33	55	X	
Controlling System – Relationship With Controlled System				
Managers and their controlling systems have a mutual trust.	6	10		X
The controlling system has a positive attitude toward performance management.	6	10		
Internal Environment – Alignment				
Managers find the performance management system relevant due to regular evaluations.	26	43	X	
Managers use the performance management system regularly during the planning and control cycle.	26	43	X	
Managers agree on changes in the CSF/KPI set.	26	43	X	

Behavioral Factor	Number of Sources	Percentage of Total Sources	Selection Criteria: >= 25%	Selection Criteria: Coverage/ Interesting
Managers find the reporting frequency good.	11	18		
Managers see the relationship between the current reporting system and the KPI system.	6	10		
Internal Environment – Organizational Culture				
Managers' results on CSFs/KPIs/BSC are openly communicated.	19	32	X	
Managers' use of the performance management system is stimulated by the reward structure.	18	30	X	
Managers are stimulated to improve their performance.	15	25	X	
Learning of managers is stimulated.	10	17		
Managers work in a stable, relatively tranquil environment.	2	3		X
Managers participating in improvement/quality programs is stimulated.	2	3		
External Environment				
Managers take the dynamics of the industry into account.	9	15		
Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	5	8		X
Managers find the performance management system relevant because it has a clear internal control purpose.	5	8		X
Managers see the relationship between the industry and the KPIs.	2	3		

APPENDIX C: CASE STUDY PROTOCOL (PHASE I)

This appendix contains the activity plan, the interview list, the document research question list, the questionnaire, and the feedback reporting list of topics that were used in the case study research of phase I.

Activity Plan

The activity plan provides a brief description of the activities performed in the case study.

Step	Activities
1. Prepare the case study	▪ Collect and study documentation about the organization ▪ Conduct introduction interview with the contact persons ▪ Agree on research scope, research timing, and research deliverable ▪ Inform the organization about the upcoming study ▪ Select interviewees ▪ Make appointments for the interviews
2. Execute the questionnaires	▪ Draft the questionnaire ▪ Select participants ▪ Distribute the questionnaires among the selected performance management system users ▪ Process the questionnaires
3. Execute the document research	▪ Collect and study documentation about the performance management system project and the performance management system itself ▪ Study performance management system IT system (if present) and performance management system reports ▪ Document findings ▪ Feed back and discuss findings with contact persons
4. Execute the interviews	▪ Draft interview list ▪ Conduct interviews with (at least) two management team members, controller, three product managers, the information manager, and performance management system project manager ▪ Make interview write-ups ▪ Feed back write-ups to interviewees and obtain approval ▪ Finalize interview write-ups
5. Analyze and give feedback	▪ Analyze the findings from questionnaire, document research, and interviews ▪ Draft conclusions and recommendations ▪ Make case description ▪ Formally present analyses and results to the organization ▪ Finalize case description ▪ Obtain approval for case description

Interview List

A. Starting Point	
2	When did the company start with the development of the performance management system project? Was this, according to you, a right moment? If yes, why? If no, why not?
3	Were you involved in the decision making of the performance management system project? If yes, in what way? If no, why not?
4	Did you have earlier experiences with performance measurement? If yes, what kind? Was this a positive or a negative experience? Which effect had this experience on your attitude toward the development of CSF/KPIs?
5	Do you think that the use of CSF/KPIs is important for the continuity of the organization? If yes, why? If no, why not?
33	How do you describe the environment in which you work in the organization (stable/turbulent)? Why?
B. Development of the Performance Management System	
8	Do the current CSFs and KPIs measure the strategy of the company? If yes, which CSFs and KPIs? If no, why not?
9	Do you agree that the right KPIs are chosen for your responsibilities inside the company?
10	Does there, according to you, exist a clear relationship between the CSFs and KPIs and the (crucial) business activities of the company? If yes, which? If no, why not?
12	Were you satisfied with your degree of involvement in the performance management system development process? How much and what role did you play (active/passive)?
13	Were you involved in the development of the definitions of the KPIs? If yes, how?
14	Are you involved in the determination of the content and the layout of the performance management system and CSF/KPI reports?
15	Who are, according to you, the initiator and promoter of the performance management system project? How do you judge/criticize their role?
32	Do you accept the responsibility for the KPIs that are appointed to you?
34	How much time (in hours and as a percentage of his time) did the promoter spend on the project?
38	Do you know the ins and outs of the definitions, and how are the definitions available? How often are they changed?
41	How often, during the performance management system project, were you kept informed about the progress of the project? Did you appreciate this communication? If yes, why? If no, why not?
42	Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? How often do conflicts take place about this set with them?
43	What, in your opinion, was the focus during the development of the CSFs and KPIs: external or internal?
44	How often did you yourself contribute to the communication?
45	During the communication, were you asked for feedback? Give examples.
46	Was something done with the feedback you gave? Give examples.
47	Do the developed CSFs and KPIs give you a clear (good) view of all of the important aspects of your operating (management) level?
48	What was, according to you, the point of view at the development of CSFs and KPIs, internal or external?
C. Use of the Performance Management System	
6	Do you find the use of the performance management system important for your role as manager? If yes, why? If no, why not?

11	Does any cause–and–effect relationship exist between the KPIs? If yes, how much? If no, why not?
16	Did you make any suggestions for changes in the performance management system - CSFs and KPIs? If yes, were these suggestions taken into account?
17	To whom do you report your CSF/KPI results? Does he or she also work with the performance management system, CSFs, KPI, and BSC? Is this, according to you, adequately visible (for the others) in the company?
19	Do you recognize any relationship between the results of the KPIs and the actions and the financial results of the company? If yes, are you able to quantify this relationship, and how do you do this? If no, why not?
20	Were you satisfied with the degree of involvement in the development of forecasts/prognosis? If yes, how do you make these forecasts/prognosis?
21	Do you feel threatened by the results of the indicators? If yes, why? If no, why not?
22	Do conflicts about the results of the indicators take place in your company?
23	Are there KPIs for which more than one manager is responsible for the results? If yes, how are possible conflicts relating to the determination of responsibilities solved? If yes, is this relationship quantified, and how is this done?
24	Does there exist, according to you, a familiar relationship (of mutual trust) between you and your boss/managers/employees?
25	How do you control your employees/managers (strict/loose)? How are you controlled by your boss?
26	Do you see any advantages or disadvantages of performance measurement in the way the people in the company are directed? If yes, what are these (dis)advantages? If no, why not?
28	How open are you in making your analysis? How serious is the conversation about the analysis of the results?
29	Does someone talk to you about the results of the CSFs and KPIs concerning your responsibilities? Do you talk to your employees about their results?
30	How much time do you spend on working with the performance management system every time? Do you find this time enough?
30a	Are you able to spend enough time (effort) working with the performance management system, compared to your other activities in the company?
35	Does a connection exist between the results of the performance management system and your personal rewards? Are you happy with this connection? If yes, why? If no, why not?
39	How do you characterize the culture in your company (a culture of improvement or of settlement)? Why? Give examples.
50	To what degree do you determine actions on the CSFs and KPIs results? If yes, can you give an example? If no, why not?
51	Are the actions you take, now better (more effective), compared to earlier times?
53	To what extent do you use the CSFs and KPIs for comparison of your results with: (a) other units of the company and (b) other companies? If used for comparison, what are the advantages? If not used for comparison, why not?
54	Do you frequently make an analysis of the results of the CSF and KPIs? If yes, how do you make this analysis?
55	For how long did you work together with your employees/boss? Does this have any positive or negative influence on your attitude toward the implementation of the performance management system? Why?
56	Do you experience the comparison of company results as a threat? If yes, why?
58	Do discussions about the reliability of the performance management system frequently take place in the organization?
59	In time, did the results of the forecasts compared to the real results improve?

D. Successful Use of the Performance Management System	
18	Do you frequently use the performance management system? How do you use it?
27	Do the managers talk frequently to each other about the results of the CSFs and KPIs? If yes, how often? If no, why not?
31	Has your performance improved through the use of the performance management system?
36	In time, did you make more or less use of the performance management system and why?
37	Are there, according to you, any future plans for the continuation of the performance management system project? If yes, what plans are made? If no, why not?
40	Is there something you want to talk about that we haven't discussed so far?

Document Research Question List

B. Development of the Performance Management System	
11	Can an unambiguous and clear link between the CSFs and KPIs and the business functions/activities be found in the performance management system and reporting set?
20	To what extent are colors used in the performance management system and reporting set?
21	To what extent are tables used in the performance management system and reporting set?
22	To what extent are graphs used in the performance management system and reporting set?
23	To what extent are targets used in the performance management system and reporting set?
24	To what extent are standards layouts used in the performance management system and reporting set?
25	What is the appearance of the performance management system and reporting set? Is it understandable and easily accessible?
27	Are responsible managers appointed for all CSFs and KPIs?
28	Is one manager responsible for each KPI?
36	Can an unambiguous and clear link between the CSFs and KPIs and the strategy be found in the performance management system and reporting set?
37	Is there a separate CSF/KPI set for each management level?
38	Is there a separate external reporting set, or is the internal reporting set also used for external reporting purposes?
C. Use of the Performance Management System	
12	Are analyses and progress and results of actions incorporated in the performance management system?
19	How often (per month/year) are forecasts made?
29	Are financial consequences of actions mentioned in the performance management system?
30	What is the quality of the analyses, as seen in the performance management system?
31	Does mutual comparison of results take place between the managers (ranking)?
32	Are forecasts improved in comparison to the actuals?
34	Are evaluations of the performance management system available? If yes, evaluate the quality of these evaluations.
35	Are CSFs and KPIs part of the yearly planning cycle?
D. Successful Use of the Performance Management System	
8	Have the results of the company improved as a consequence of using the performance management system? If yes, how much improvement (in percentages) has been realized? If no, why not?

33	Review the plans (if available) for the next project phase.
39	What is the number of users of the performance management system?
40	What is the frequency of use (number of times per month)?
E. General Company Information	
1	Branch
2	National/International
3	Independent/Part of a conglomerate
4	Organizational structure
5	Mission/Strategy of the company: content, focus (clients, costs, etc.), how long in place
6	Average age of management
7	Current situation: turnover, margin, number of employees, number of managers
10	Percentage financial versus nonfinancial information
13	Number of CSFs and KPIs defined
14	Which kind of CSFs and KPIs are used (strategic, functional/tactical/operational)?
15	Frequency of reporting
16	Are specific definitions and targets used?
17	Are the definitions of the KPIs documented? If yes, how?
18	Volume of the periodic reporting set (in number of pages)
26	Name of the performance management system project

Questionnaire

The questionnaire contains 19 questions that for the most part can be answered according to this scheme:

1 = completely disagree
2 = partially disagree
3 = partially agree
4 = completely agree

No.	Questions	Answers
1a.	Were there sufficient reasons for implementing a performance management system? Options: ▪ Lack of operational data ▪ Lack of insight into the execution of the strategy ▪ Lack of insight into the results of crucial organizational processes ▪ Reporting not enough action oriented ▪ Lack of insight into developments in the market (competition, customer focus) ▪ Other	Choose one or more options

No.	Questions	Answers
1b.	What was, according to you, the main goal of implementing a performance management system? Options: ▪ There was a relationship with implementing the new strategy ▪ For accountability purposes ▪ For benchmarking purposes ▪ Not clear	Choose one or more options
2	I had a positive attitude toward the implementation of the performance management system, CSFs, KPIs, and BSC.	1/2/3/4
3	I was (actively) involved during definition making of the KPIs.	1/2/3/4
4	I was sufficiently involved during the final choosing of the KPIs.	1/2/3/4
5	What percentage of the total data needed in the performance management system is manually provided by you:	More than 75%/ Between 25 and 75%/ Less than 25%
6	The time my subordinates and I spend on collecting data for KPI reporting is acceptable.	1/2/3/4
7	I was sufficiently involved during the setting of targets for the KPIs.	1/2/3/4
8	My suggestions and wishes for changes in the CSF/KPI set have been sufficiently implemented.	1/2/3/4
9	The current CSF/KPI set measures the strategic goals of the organization adequately.	1/2/3/4
10	There exists an unambiguous relationship between the CSF/KPI set and the crucial business activities of the organization.	1/2/3/4
11	The current CSF/KPI set is an adequate reflection of my responsibility area.	1/2/3/4
12	The manner in which the performance management system reports and shows CSFs, KPI, and BSC is understandable and easily accessible.	1/2/3/4
13	The reported results are reliable.	1/2/3/4
14	I am sufficiently involved during the making of analyses.	1/2/3/4
15	How often do you discuss the KPI results with other people in the organization?	Once per month/ once per quarter/ less than once per month/ other time frame
16	I currently have a positive attitude toward the use of the performance management system, CSFs , KPIs, and BSC: Yes/No	1/2/3/4
17	The performance management system, CSFs, KPIs, and BSC play an import role during my activities.	1/2/3/4
18	My results and those of my subordinates have improved as a consequence of using the performance management system.	1/2/3/4
19	Room for additional remarks:	

Feedback Reporting List of Topics

The feedback reporting list of topics contains a list of topics that have to be addressed in the case description.

Topic	Content
1. Description of company	▪ Branch ▪ Products and services ▪ Mission and strategy ▪ Turnover and number of personnel ▪ Organizational structure
2. History of performance management system project	▪ The reason for starting the project ▪ Situation of the company at the starting time ▪ Time span of the project ▪ Project approach (including description of the project team) ▪ Description (brief, concise) of the three project stages: starting, development, and use ▪ Current situation of the company ▪ Current status of the project
3. Content of performance management system	▪ Examples of the CSFs and KPIs ▪ Examples of the BSC and other management reporting formats ▪ Examples of the IT solution (if present) ▪ Number of CSFs, KPIs, BSC, and other management reports ▪ Description of the target audiences for the CSFs, KPIs, and BSC
4. Case study research	▪ Reasons for researching this company ▪ Description (brief, concise) of the research steps ▪ Description of the results of the questionnaire ▪ Description of the results of the interviews ▪ Description of the results of the document analysis
5. Results of case study research	▪ Summary of the results ▪ Detailed description of the results, per project stage ▪ Detailed description of the results on the criteria for regular use

APPENDIX D: DISTRIBUTION SCHEME OF CASE STUDY PROTOCOL

The operational questions were distributed over the three sources of information collection that were used during the case study research: a questionnaire (Q), an interview list (I), and a document research question list (D). In the two tables underneath, the numbers of the corresponding source questions are given (as listed in the tables in Appendix C). Some rephrasing of the questions may have taken place in order to make them more understandable for specific interviewees.

Classification Scheme Part	Behavioral Factor	Questions	Source
Performance management system – Development method	Managers accept the need for performance management.	– What were, according to you, the reasons for implementing a performance management system? – Do you think that the use of the performance management system is important for the continuity of the organization? If yes, why? If no, why not?	Q1 I5
	Managers have an active role during the development stage of the performance management system project.	– How would you describe your role during the implementation of the performance management system: active or reviewing? – Were you sufficiently involved during the development of the performance management system, CSFs and KPIs?	I12 Q3
	Managers agree on the starting time.	– Was, according to you, the right starting time chosen for the implementation? If yes, why? If no, why not?	I2
	Managers have been involved in decision making about the project starting time.	– Were you involved in the decision making about the project starting time? If yes, how?	I3
	Managers are informed about the status of the performance management system project.	– How often were you informed, during the project, about the status of the project? Did you value this communication? Why? – Which communication tools were used?	I41
	Managers are actively communicating about the performance management system project.	– How often did you contribute to the communication about the project? – Was, during the communication, feedback asked for? – Was there any follow-up on given feedback?	I44 I45 I46
Performance management system – Content	Managers understand the meaning of KPIs.	– Are you familiar with the definitions of the KPIs? How are these available? – How often (per month/year) are these definitions changed?	I38
	Managers are involved in defining KPIs.	– Were you (actively) involved in the defining of the KPIs?	I13

Classification Scheme Part	Behavioral Factor	Questions	Source
	Managers have insight into the relationship between KPIs and financial results.	– Do you discern a relationship between the results on KPIs, actions taken and the organization's financial result? If yes, is this relationship quantified, and how is this done? If no, why not? – Are financial consequences of KPI results mentioned in the performance management system?	I19 D29
	Managers do not get discouraged by the collection of performance data.	– Is the time you and your subordinates spend on collecting data for KPI reporting acceptable? – What percentage of the total data is manually provided?	Q6 Q5
	Managers have insight into the relationship between strategy and CSFs/KPIs.	– Does the current CSF/KPI set measure the strategic goals of the organization adequately? If yes, which goals are being measured? If no, why not?	I8, D36, Q9
	Managers have insight into the relationship between business processes and CSFs/KPIs	– Is there an unambiguous relationship between the CSF/KPI set and the crucial business activities of the organization? If yes, which crucial activities are being measured? If no, why not?	I10, D37, Q10
	Managers are involved in setting KPI targets.	– Were you sufficiently involved during the setting of targets for the KPIs? – To which degree are KPI targets mentioned in the performance management system?	Q7 D23
	Managers' KPI sets are aligned with their responsibility areas.	– Is the current CSF/KPI set an adequate reflection of your responsibility area?	I9, Q11
	Managers have insight into the relationship between cause and effect.	– Are there, in your opinion, clear cause–and–effect relationships identified for the KPIs? If yes, how many relationships? If no, why not?	I11
Performance management system – Feedback	Managers are involved in forecasting.	– Are you sufficiently involved in forecasting? How are you involved? – How often (per year) are forecasts made?	I20 D19
	Managers trust good-quality forecasts.	– Has, in your opinion, the quality of the forecasts been improved, compared to the actuals?	I59, D32
	Managers' activities are supported by KPIs.	– To which degree do you undertake actions, based on the KPI results? Can you give an example of an action? If you do not take action based on KPI results, why not? – Are these actions better focused and more effective than in the past?	I50 I51
	Managers' frames of reference contain similar KPIs.	– Do you use the CSF/KPI set for comparing your performance with those of other units or organizations? If yes, what are benefits? If no, why not? – Is comparison of results/benchmarking viewed as threatening in your unit? If yes, why?	I53 I56

Classification Scheme Part	Behavioral Factor	Questions	Source
	Managers are involved in making the CSF/KPI/BSC reporting layout.	– Were you sufficiently involved in the reporting layout and content definition?	I14
	Managers understand the CSF/KPI/BSC reporting.	– Are colors, tables, graphs and standard formats used in the performance management system? – How intelligible do you find the performance management system (including volume of the reports)?	D20, D21, D22, D24, D25 Q12
	Managers trust the performance information.	– How reliable is the performance management system, in your opinion? – How often do you have discussions about the reliability of the performance management system?	Q13 I58
	Managers are involved in making analyses.	– Do you regularly make analyses of the KPI results? How? – Are you sufficiently involved in analysis making?	I54 Q14
	Managers trust good-quality analyses.	– How open are you in your analyses? How serious are your conversations about your analyses? – How good, in your opinion, are analyses generally in the organization?	I28 D30
Controlled system	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	– Is the CSF/KPI set a good representation of all the important issues on your management level? – Is there a separate, specific CSF/KPI set for each management level?	I47 D37
	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	– Were you sufficiently involved in the priority setting of the KPIs?	Q4
	Managers have enough time to work with their CSFs/KPIs/BSC.	– How much time do you spend on working with the performance management system? Is this enough?	I30
	Managers have earlier (positive) experiences with performance management.	– Did you already have prior experience with performance management? – Was this a positive or a negative experience? – Did this experience affect your attitude toward this project?	I4, Q2
	Managers realize the importance of CSFs/KPIs/BSC to their performance.	– Do you find the use of the performance management system, CSFs and KPIs useful for your role as manager? If yes, why? If no, why not?	I6, Q17
	Managers do not experience CSFs/KPIs/BSC as threatening.	– Are the CSFs, KPIs , and the BSC threatening to you? Why?	I21

Classification Scheme Part	Behavioral Factor	Questions	Source
	Managers can use their CSFs/KPIs/BSC for managing their employees.	– Are there advantages and disadvantages in using performance management when managing subordinates and communicating with superiors? If yes, which? If no, why not?	I26
Controlling system	Managers can influence the KPIs assigned to them.	– Do you accept responsibility for the CSFs and KPIs appointed to you? – Are you tackled on your performance? – Do you tackle your subordinates on their performance?	I32 I29 I29
	Managers have sole responsibility for a KPI.	– Are responsible persons appointed for each KPI? – Is per KPI only one person responsible? – Are there KPIs for which there is more than one person responsible? If yes, how are conflicts about these KPIs resolved?	I22, D27 I23, D28 I23
	Managers accept the promoter.	– Who was the initiator of the performance management system development project? – Who was the promoter of the performance management system development project? – What was the management level of the promoter? – How do you judge the role of the promoter during the project?	I15
	Managers see the promoter spends enough time on the performance management system implementation.	– How much time (in hours and as a percentage of his time) did the promoter spend on the project?	I34
	Managers clearly see the promoter using the performance management system.	– Does the management team work with the new performance management system? – How visible is this in the organization?	I17 I17
	Managers and their controlling systems have a mutual trust.	– How do you manage your subordinates: with tight or loose control? – How are you managed by your superior: centralized or decentralized? – Is there trust between you and your subordinates/superior? – How long have you worked with your subordinates/superior? – Has this made the implementation of performance management easier?	I25 I25 I24 I55
Internal environment	Managers find the performance management system relevant due to regular evaluations.	– How many times per year is the CSF/KPI set reviewed and evaluated?	D34

Classification Scheme Part	Behavioral Factor	Questions	Source
	Managers use the performance management system regularly during the planning and control cycle.	– Are CSFs, KPIs , and the BSC part of the yearly planning cycle?	D35
	Managers agree on changes in the CSF/KPI set.	– How many changes are made each time to the CSF/KPI set? – Who decides about these changes? – Have you made suggestions for changes in the CSF/KPI set and have these suggestions been implemented?	I16, Q8
	Managers are stimulated to improve their performance.	– How do you characterize the culture of your organization: focused on improvement or on punishment? How does this show?	I39
	Managers work in a stable, relatively tranquil environment.	– Can you, in the light of all your activities, spend enough time on working with the performance management system and your specific KPIs? – Do conflicts take place about KPI results? – How do you characterize the working environment in your organization: stable or turbulent?	I30 I22 I33
	Managers' results on CSFs/KPIs/BSC are openly communicated.	– Are the results of all the KPIs reported to all the managers, or does distribution take place per responsibility area? – Do performance comparisons take place between managers (ranking)?	D31
	Managers' use of the performance management system is stimulated by the reward structure.	– Are KPI results linked to your reward? If yes, are you happy with this link? If no, why not? – Is the reward strictly financial, or also nonfinancial? What type of nonfinancial rewards are used?	I35
External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	– Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? – How often do conflicts take place with the stakeholders about this set?	I42
	Managers find the performance management system relevant because it has a clear internal control purpose.	– Is the CSF/KPI set used for external reporting? Is a separate external reporting set of internal reports being used? – What, in your opinion, was the focus during the development of the CSFs and KPIs: external or internal?	D38 I43

Criteria for Regular Use	Source
Are the results of the organization, according to the managers, improved through the use of the performance management system?	Q18, I31
Are the results of the organization, objectively, improved through the use of the performance management system?	D8
Has the degree of performance management system use by managers increased?	D39, D40, I18, I36
Are there plans for follow-up projects?	D33, I37
Is there a difference in manager attitude toward performance management, between project start and currently?	Q2, Q16, I4
Is there regular communication about KPI results?	Q15, I27
Are the CSFs, KPI, and BSC incorporated in the regular management reporting?	Review D

APPENDIX E: DETAILED RESULTS FOR AZU

This appendix gives the detailed results and the document with the final scoring for AZU.

Results of AZU Questionnaire

The questionnaire contained 19 questions that for the most part could be answered according to the following scheme:

1 = completely disagree
2 = partially disagree
3 = partially agree
4 = completely agree

The following table gives the averaged results. The following abbreviations are used:

N-tot = number of users that answered this question
N = number of users who gave this particular answer
% = percentage of users who gave this answer (N/N-tot)
AVR = average score (1 to 4)
SD = standard deviation of the answers
Min = minimum score given
Max = maximum score given

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
1a.	Were there sufficient reasons for implementing a performance management system? Options:							
	▪ Lack of operational data	61	37	60.7				
	▪ Lack of insight into the execution of the strategy	61	31	50.8				
	▪ Lack of insight into the results of crucial organizational processes	61	29	47.5				
	▪ Reporting not enough action oriented	61	12	19.7				
	▪ Lack of insight into developments in the market (competition, customer focus)	61	9	14.8				
	▪ Other	61	8	13.1				
2	I had a positive attitude toward the implementation of the performance management system, CSFs, KPI, and the BSC.	61			3.4	0.56	2	4
3	I was (actively) involved during definition making of the KPIs.	60			2.1	0.89	1	4
4	I was sufficiently involved during the final choosing of the KPIs.	60			1.9	0.95	1	4

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
5	What percentage of the total data needed in the performance management system is manually provided by you:							
	▪ More than 75%	55	1	1.8				
	▪ Between 25 and 75%	55	9	16.4				
	▪ Less than 25%	55	45	81.8				
6	The time my subordinates and I spend on collecting data for KPI reporting is acceptable.	54			3.2	0.79	1	4
7	I was sufficiently involved during the setting of targets for the KPIs.	60			2.0	0.94	1	4
8	My suggestions and wishes for changes in the CSF/KPI set have been sufficiently implemented.	61			2.0	0.87	1	4
9	The current CSF/KPI set measures the strategic goals of the organization adequately.	61			2.2	0.67	1	3
10	There exists an unambiguous relationship between the CSF/KPI set and the crucial business activities of the organization.	62			2.4	0.73	1	4
11	The current CSF/KPI set is an adequate reflection of my responsibility area.	61			2.0	0.85	1	4
12	The manner in which the performance management system reports and shows CSFs, KPI, and BSC is understandable and easily accessible.	62			3.0	0.72	1	4
13	The reported results are reliable.	58			2.6	0.75	1	4
14	I am sufficiently involved during the making of analyses.	61			2.0	0.86	1	4
15	How often do you discuss the KPI results with other people in the organization?							
	▪ Once per month or more	62	1	1.6				
	▪ Once or twice per month	62	21	33.9				
	▪ Less than once per month	62	40	64.5				
	▪ Other time frame							
16	I currently have a positive attitude toward the use of the performance management system, CSFs, KPIs, and BSC.	62			3.2	0.75	1	4
17	The performance management system, CSFs, KPIs, and BSC play an import role during my activities.	62			2.3	0.97	1	4
18	My results and those of my subordinates have improved as a consequence of using the performance management system.	61			1.9	0.96	1	4
19	Room for additional remarks:							
–	AZU score should be expanded into a more comprehensive performance management system.	36	9	25.0				
–	The system should contain more management specific KPIs.	36	9	25.0				
–	Some managers only feel a distant involvement with AZU score.	36	8	22.2				

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
–	AZU score should become part of the organization's culture.	36	5	13.9				
–	The information is updated far too late (AZU score is not up to date).	36	4	11.1				
–	AZU score is not yet used, especially by middle management, for planning and budgeting purposes.	36	4	11.1				
–	AZU score should not become an end in itself (it is only a means for better planning and control).	36	2	5.6				
–	AZU score looks good!	36	1	2.8				
–	Managers do not receive enough support when working with the KPIs.	36	1	2.8				
–	There is not enough communication about the future and plans regarding AZU score.	36	1	2.8				
–	It takes a lot of effort and stamina to find, in the system, the KPIs that really matter.	36	1	2.8				
–	The AZU score project was managed well, only the system does not have enough added value (yet).	36	1	2.8				
–	There should be AZU score monitors on central places (like the cafeteria).	36	1	2.8				
–	There should be more decentralized discussion about the KPIs.	36	1	2.8				
–	It took quite a while before AZU score became known to the employees.	36	1	2.8				
–	The system is slow.	36	1	2.8				
–	AZU score starts from known information. It would be better to first identify which information is needed, and then make a system.	36	1	2.8				
–	Up-to-date information in the system should always be reliable.	36	1	2.8				

Results of AZU Interviews

The following table contains a summary of the answers given during the interviews at AZU. Not all questions in the interview list have been answered, these are indicated with a – in the last column.

A. Starting Point		
2	When did the company start with the development of the performance management system project? Was this, according to you, a right moment? If yes, why? If no, why not?	Many managers were unsure about the starting time of the development of AZU score. Starting dates ranging from the end of 1991 to the end of 1994 were mentioned. In itself, managers considered the project timely, however, there were many other projects going on at the time.

3	Were you involved in the decision making of the performance management system project? If yes, in what way? If no, why not?	The involvement of managers in the decision-making process was very limited. The board took the decision, managers were informed through presentations about the project start.
4	Did you have earlier experiences with performance measurement? If yes, what kind? Was this a positive or a negative experience? Which effect had this experience on your attitude toward the development of CSF/KPIs?	Several managers had previous experience with performance management. Some of them had registration procedures in place in their own departments. These experiences were all positive, which meant these managers had a positive attitude toward AZU score.
5	Do you think that the use of CSF/KPIs is important for the continuity of the organization? If yes, why? If no, why not?	Everybody considered AZU score to be important for the continuity of AZU, because through use of the system managers expected that AZU would know better where it stands and people really needed to think about their performance. However because AZU score would not contain division/department specific KPIs, managers considered the added value of the system for themselves to be low.
33	How do you describe the environment in which you work in the organization (stable/turbulent)? Why?	The environment was quite hectic at that time due to several special projects like improving patient satisfaction, defining referral categories, establishing cost prices for medical services, opening of outpatient clinics and the integration of AZU with a children's hospital
B. Development of the Performance Management System		
8	Do the current CSFs and KPIs measure the strategy of the company? If yes, which CSFs and KPIs? If no, why not?	There was no real connection between the strategy of AZU and the KPIs. There was an indicator called "Management of referral categories", which was very strategic for the organization. However, this was not translated to lower levels in the organization.
9	Do you agree that the right KPIs are chosen for your responsibilities inside the company?	The defined KPIs did not provide an adequate representation of the responsibility areas of the managers. This was because there were no division/department specific KPIs and also the category "quality" in AZU score did not contain indicators yet.
10	Does there, according to you, exist a clear relationship between the CSFs and KPIs and the (crucial) business activities of the company? If yes, which? If no, why not?	There was no clear relationship between the CSFs/KPIs and the (crucial) business activities of AZU. This was because there were no division/department specific KPIs and also the activities of AZU were changing quite rapidly at the time.
12	Were you satisfied with your degree of involvement in the performance management system development process? How much and what role did you play (active/passive)?	In general, the managers were not actively involved, except for the managers who were part of the project team. The majority of the managers were informed through presentations en meetings.
13	Were you involved in the development of the definitions of the KPIs? If yes, how?	In general, the managers were not actively involved in defining KPIs. The project team developed the definitions and presented these to the managers, for obtaining their feedback, comments and ideas.

14	Are you involved in the determination of the content and the layout of the performance management system and CSF/KPI reports?	In general, the managers were not actively involved in defining the layout and "touch and feel" of the reports and AZU score. Most managers did not want to be involved anyway in this activity. The project team developed the layouts and presented these to the managers, for obtaining their feedback, comments and ideas.
15	Who are, according to you, the initiator and promoter of the performance management system project? How do you judge/criticize their role?	Managers were unclear about who the promoter of the project was. Many different people, ranging from board members to project team members, were mentioned as promoters.
32	Do you accept the responsibility for the KPIs that are appointed to you?	Most managers did not feel responsible for the KPIs because they were too generic and did not adequately represent their responsibility areas.
34	How much time (in hours and as a percentage of his time) did the promoter spend on the project?	-
38	Do you know the ins and outs of the definitions and how are the definitions available? How often are they changed?	-
41	How often, during the performance management system project, were you kept informed about the progress of the project? Did you appreciate this communication? If yes, why? If no, why not?	-
42	Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? How often do conflicts take place about this set with them?	-
43	What, in your opinion, was the focus during the development of the CSFs and KPIs: external or internal?	-
44	How often did you yourself contribute to the communication?	-
45	During the communication, were you asked for feedback? Give examples.	-
46	Was something done with the feedback you gave? Give examples.	-
47	Do the developed CSFs and KPIs give you a clear (good) view of all of the important aspects of your operating (management) level?	-
48	What was, according to you, the point of view at the development of CSFs and KPIs, internal or external?	-
C. Use of the Performance Management System		
6	Do you find the use of the performance management system important for your role as manager? If yes, why? If no, why not?	Opinions were divided on this. Some managers considered the system important because it gave better insight into the performance of the own unit. However, many KPIs were to generic to be of real relevance for the division/department.

11	Does any cause–and–effect relationship exist between the KPIs? If yes, how much? If no, why not?	No specific cause–and–effect relationships were identified between the KPIs. There were some initial thoughts about this, but no formal activities had been deployed yet to remedy this omission.
16	Did you make any suggestions for changes in the performance management system, CSFs and KPIs? If yes, were these suggestions taken into account?	Several managers made regular suggestions for changing/adapting the KPI set, especially to let it better match their responsibility areas.
17	To whom do you report your CSF/KPI results? Does he or she also work with the performance management system, CSFs, KPI, and BSC? Is this, according to you, adequately visible (for the others) in the company?	The formal reporting, based on information in AZU score, was discussed between managers and board during the quarterly meeting. The reporting was also discussed by the department heads during management team meetings. The use of AZU score itself by the board was not very visible in the organization. This resulted in a feeling that the importance of AZU score was not that high.
19	Do you recognize any relationship between the results of the KPIs and the actions and the financial results of the company? If yes, are you able to quantify this relationship, and how do you do this? If no, why not?	Within AZU there was no clear relationship between the results of the KPIs and the actions and the financial results of the company. This was because at that time there were no reliable cost prices available.
20	Were you satisfied with the degree of involvement in the development of forecasts/prognosis? If yes, how do you make these forecasts/prognosis?	In general, the managers were not actively involved in forecasting because forecasts were hardly made. The initial forecasts in AZU score were made by the project team leader, and were automatically updated by an algorithm in the system.
21	Do you feel threatened by the results of the indicators? If yes, why? If no, why not?	Managers didn't feel the results on the KPIs were threatening to them. In general, AZU score was seen as an improvement tool. There could be some tension when medical personnel were confronted with results they didn't expect and didn't feel responsible for. The cause of this was often a lack of understanding of the KPI definitions.
22	Do conflicts about the results of the indicators take place in your company?	There were hardly any conflicts and discussions about the results. Discussions took mainly place about KPI definitions and reliability.
23	Are there KPIs for which more than one manager is responsible for the results? If yes, how are possible conflicts relating to the determination of responsibilities solved?	Within the organization no formal process of accountability regarding the KPIs had taken place. There were no open conflicts about KPI responsibilities, the working atmosphere was characterized as "polite".
24	Does there exist, according to you, a familiar relationship (of mutual trust) between you and your boss/managers/employees?	The relationship between medical personnel and managers was described as a "productive relationship, based on mutual trust".
25	How do you control your employees/managers (strict/loose)? How are you controlled by your boss?	The prevalent management style was "participative, with a hint of being directive". Most of the times participation was gained on the basis of logic arguments, consensus and communication.

26	Do you see any advantages or disadvantages of performance measurement in the way the people in the company are directed? If yes, what are these (dis)advantages? If no, why not?	In general, managers saw benefits in managing their employees using performance management, especially in discovering bottlenecks and in better planning. However, in some cases medical personnel felt AZU score was a tool to manage them, instead of a management tool for them.
28	How open are you in making your analysis? How serious is the conversation about the analysis of the results?	Only a small group of selected managers was able to make analyses in AZU score. These were however only made sparingly. During the management team meetings, analyses were made orally. These analyses were quite open and honest.
29	Does someone talk to you about the results of the CSFs and KPIs concerning your responsibilities? Do you talk to your employees about their results?	The KPI results were hardly discussed with the direct superior. During management team meetings people were questioned about their result. The board decided to improve accountability by including agreements about KPIs in the forthcoming management contracts, which were made each year between individual managers and the board.
30	How much time do you spend on working with the performance management system - KPIs every time? Do you find this time enough?	Time spent varied between 60 minutes per week to 90 minutes per month.
30a	Are you able to spend enough time (effort) working with the performance management system - KPIs, compared to your other activities in the company?	-
35	Does a connection exist between the results of the KPIs and your personal rewards? Are you happy with this connection? If yes, why? If no, why not?	There was no direct link between the results of the KPIs (AZU score) and the reward system.
39	How do you characterize the culture in your company (a culture of improvement or of settlement)? Why? Give examples.	There was an open culture in the organization.
50	To what degree do you determine actions on the CSFs and KPIs results? If yes, can you give an example? If no, why not?	-
51	Are the actions you take, now better (more effective), compared to earlier times?	-
53	To what extent do you use the CSFs and KPIs for comparison of your results with: (a) other units of the company and (b) other companies? If used for comparison, what are the advantages? If not used for comparison, why not?	-
54	Do you frequently make an analysis of the results of the CSF and KPIs? If yes, how do you make this analysis?	-
55	For how long did you work together with your employees/boss? Does this have any positive or negative influence on your attitude about the implementation of the performance management system? Why?	-
56	Do you experience the comparison of company results as a threat? If yes, why?	-

58	Do discussions about the reliability of the performance management system frequently take place in the organization?	In general, there existed a feeling that the data in AZU score was not reliable. This was mainly caused by the lack of insight managers had into the way the data was collected and registered. As a result, many discussions took place among the managers about the reliability, the definitions, and also the timeliness of the management reports.
59	In time, did the results of the forecasts compared to the real results improve?	-
D. Successful Use of the Performance Management System		
18	Do you frequently use the performance management system? How do you use it?	-
27	Do the managers talk frequently to each other about the results of the CSFs and KPIs? If yes, how often? If no, why not?	Opinions were divided on this. Managers felt there were regular discussions about the KPI definitions, but hardly any about the KPI results. In the outpatient clinic the KPIs were a standard item on the management team meeting agenda.
31	Has your performance improved through the use of the performance management system?	Opinions were divided on this. Some managers have specifically improved the reliability of their data and also gained a better insight into the reasons for their results. Other managers, especially on division and departmental levels, did not experience improvements, caused by the fact AZU score did not contain specific KPIs for these levels.
36	In time, did you make more or less use of the performance management system, and why?	Opinions were divided on this. On the one hand, the performance management system was used more than before because AZU score was discussed during monthly management team meetings and quarterly board meetings. On the other hand, AZU score was not specific enough and the information was still considered to be late and unreliable, so managers were not inclined to use the system.
37	Are there, according to you, any future plans for the continuation of the performance management system project? If yes, what plans are made? If no, why not?	Everybody in the organization knew about the plans for AZU score II.

Results of AZU Document Research

B. Development of the Performance Management System		
11	Can an unambiguous and clear link between the CSFs and KPIs and the business functions/activities be found in the performance management system and reporting set?	No documentation about this available.
20	To what extent are colors used in the performance management system and reporting set?	Extensively used.
21	To what extent are tables used in the performance management system and reporting set?	Not used at all.

22	To what extent are graphs used in the performance management system and reporting set?	Extensively used.
23	To what extent are targets used in the performance management system and reporting set?	Three targets were defined, namely for: Absenteeism, Telephonic accessibility, and Decrease financial budget.
24	To what extent are standards layouts used in the performance management system and reporting set?	Extensively used.
25	What is the appearance of the performance management system and reporting set? Is it understandable and easily accessible?	AZU score and the management reports were easily accessible and easy to understand.
27	Are responsible managers appointed for all CSFs and KPIs?	Yes, for each KPI one specific manager has been appointed. The responsibilities of these managers was not documented.
28	Is one manager responsible for each KPI?	Yes, but this was not documented.
36	Can an unambiguous and clear link between the CSFs and KPIs and the strategy be found in the performance management system and reporting set?	-
37	Is there a separate CSF/KPI set for each management level?	-
38	Is there a separate external reporting set, or is the internal reporting set also used for external reporting purposes?	-
C. Use of the Performance Management System		
12	Are analyses and progress and results of actions incorporated in the performance management system?	No analyses were present in the reporting.
19	How often (per month/year) are forecasts made?	The system made monthly forecasts for three KPIs and quarterly forecasts for one KPI.
29	Are financial consequences of actions mentioned in the performance management system?	No.
30	What is the quality of the analyses, as seen in the performance management system?	No analyses were present in the reporting.
31	Does mutual comparison of results take place between the managers (ranking)?	No.
32	Are forecasts improved in comparison to the actuals?	This was unclear from the reports.
34	Are evaluations of the performance management system available? If yes, evaluate the quality of these evaluations.	A written evaluation of AZU score was made by the project team for the board.
35	Are CSFs and KPIs part of the yearly planning cycle?	-

D. Successful Use of the Performance Management System		
8	Have the results of the company improved as a consequence of using the performance management system? If yes, how much improvement (in percentages) has been realized? If no, why not?	Category "patient mix": not clear. Category "cost control": not clear, however, number of hospitalization days had decreased. Category "service": "Diagnostic processing time outpatient clinic" was worse, "Timeliness outpatient clinical referral letters" was better.
33	Review the plans (if available) for the next project phase.	There were project plans for AZU score II.
39	What is the number of users of the performance management system?	-
40	What is the frequency of use (number of times per month)?	-
E. General Company Information		
1	Branch	Health care.
2	National/International	National.
3	Independent/Part of a conglomerate	Independent.
4	Organizational structure	See Exhibit 4.3.
5	Mission/Strategy of the company: content, focus (clients, costs etc.), how long in place	See Section 4.2.1, *Description of AZU*.
6	Average age of management (available over 1994)	<25 years: 7.2%; 25–34 years: 40.5%; 35–44 years: 35.3%; >45 years: 17.0%
7	Current situation: turnover, margin, number of employees, number of managers	See Section 4.2.1, *Description of AZU*.
10	Percentage financial versus nonfinancial information	Only one of the 13 KPIs was of a financial nature (Decrease financial budget).
13	Number of CSFs and KPIs defined	13
14	Which kind of CSFs and KPIs are used (strategic, functional/operational)?	KPIs all were strategic of nature.
15	Frequency of reporting	Reporting was discussed on a quarterly basis. Seven KPIs were updated monthly, six KPIs were updated quarterly.
16	Are specific definitions and targets used?	Specific definitions were used, no specific targets were used.
17	Are the definitions of the KPIs documented? If yes, how?	In the help text of AZU score.
18	Volume of the periodic reporting set (in number of pages)	The report that was discussed quarterly consisted of one page, containing actuals, with sometimes targets or forecasts.
26	Name of the performance management system project	AZU score.

Overview of AZU Final Results

For all the behavioral factors, the results from interviews, questionnaires and document research have been included in a single table. In the 'questionnaire' column the average score has been put in between brackets. On the basis of these results, the researchers awarded a final score to each behavioral factor. The definition of symbols is as follows:

\+ = behavioral factor has been satisfied (in the opinion of the researchers)
0 = behavioral factor has been partially satisfied
– = behavioral factor has not been satisfied
NA = behavioral factor has either not been researched or not enough answers were obtained to make a judgement

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
Performance management system – Development method	Managers accept the need for performance management.	+ AZU score was important for the continuity of the organization	NA	NA	+
	Managers have an active role during the development stage of the performance management system project.	– Limited involvement (passive role)	0 (2.1)	NA	–
	Managers agree on the starting time.	0 Many different starting times were mentioned	NA	NA	0
	Managers have been involved in decision making about the project starting time.	– No involvement	NA	NA	–
	Managers are informed about the status of the performance management system project.	NA	NA	NA	NA
	Managers are actively communicating about the performance management system project.	NA	NA	NA	NA
Performance management system – Content	Managers understand the meaning of KPIs.	– No clear definitions, many discussions	NA	+ Definitions were documented in help text	0
	Managers are involved in defining KPIs.	– Limited involvement	NA	NA	–

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	Managers have insight into the relationship between KPIs and financial results.	– A direct and clear relationship lacked	NA	0 For six of the 13 KPIs some sort of relationship was documented	–
	Managers do not get discouraged by the collection of performance data.	NA	+ (3.2)	NA	+
	Managers have insight into the relationship between strategy and CSFs/KPIs.	– Relationship was not clear	0 (2.2)	0 One KPI is clearly strategic	–
	Managers have insight into the relationship between business processes and CSFs/KPIs.	– Relationship was not clear	0 (2.4)	– No KPIs for several crucial processes	–
	Managers are involved in setting KPI targets.	NA	0 (2.0)	– For three KPIs the board set targets	–
	Managers' KPI sets are aligned with their responsibility areas.	– No division/department specific KPIs	0 (2.0)	NA	–
	Managers have insight into the relationship between cause and effect.	– Relationships were not specified	NA	NA	–
Performance management system – Feedback	Managers are involved in forecasting.	– No participation, done by algorithm in system	0 (2.0)	NA	–
	Managers trust good-quality forecasts.	NA	NA	NA	NA
	Managers' activities are supported by KPIs.	NA	NA	NA	NA
	Managers' frames of reference contain similar KPIs.	NA	NA	NA	NA
	Managers are involved in making the CSF/KPI/BSC reporting layout.	– Limited involvement	NA	NA	–

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	Managers understand the CSF/KPI/BSC reporting.	NA	+ (3.0)	+ Clear layouts, definitions available in help text	+
	Managers trust the performance information.	– Regular discussions about the reliability	0 (2.6)	NA	0
	Managers are involved in making analyses.	0 Only specific managers could make analyses	0 (2.0)	NA	0
	Managers trust good-quality analyses.	+ Analyses were open and honest	NA	– Analyses were not documented	0
Controlled system	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	NA	– (1.9)	NA	–
	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	+ Only 13 KPIs	NA	NA	+
	Managers have enough time to work with their CSFs/KPIs/BSC.	+ Only limited time was required	NA	NA	+
	Managers have earlier (positive) experiences with performance management.	+ Several managers had positive experience	+ (3.4)	NA	+
	Managers realize the importance of CSFs/KPIs/BSC to their performance.	0 Opinions were divided	0 (2.3)	NA	0
	Managers do not experience CSFs/KPIs/BSC as threatening.	+ Results were not seen as threatening	NA	NA	+
	Managers can use their CSFs/KPIs/BSC for managing their employees.	+ Managers saw benefits in using performance management	NA	NA	+

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
Controlling system	Managers can influence the KPIs assigned to them.	0 Opinions were divided	NA	NA	0
	Managers have sole responsibility for a KPI.	0 No formal responsibility setting, no conflicts either	NA	– KPI responsibilities were not documented	–
	Managers accept the promoter.	– Unclear who promoter was	NA	NA	–
	Managers see the promoter spends enough time on the performance management system implementation.	NA	NA	NA	NA
	Managers clearly see the promoter using the performance management system.	– Use by promoter was not very visible	NA	NA	–
	Managers and their controlling systems have a mutual trust.	NA	NA	NA	NA
Internal environment	Managers find the performance management system relevant due to regular evaluations.	– Only one ad hoc evaluation was made	NA	0	–
	Managers use the performance management system regularly during the planning and control cycle.	0 KPIs were going to be used in the quarterly planning meeting	NA	– There were no targets, forecasts nor analyses available for planning and control purposes	0
	Managers agree on changes in the CSF/KPI set.	– There was no consensus	0 (2.0)	NA	–
	Managers are stimulated to improve their performance.	NA	NA	NA	NA
	Managers work in a stable, relatively tranquil environment.	– Dynamic organization, many developments, many special projects	NA	NA	–

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	Managers' results on CSFs/KPIs/BSC are openly communicated.	+ Users of AZU score could see results on all KPIs	NA	0 Limited insight into the real figures	+
	Managers' use of the performance management system is stimulated by the reward structure.	– No link was found	NA	NA	–
External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	+ Board of supervisors had only limited influence	NA	NA	+
	Managers find the performance management system relevant because it has a clear internal control purpose.	NA	NA	NA	NA

APPENDIX F: DETAILED RESULTS FOR KADASTER

This appendix gives the detailed results and the document with the final scoring for Kadaster.

Results of Kadaster Questionnaire

The questionnaire contained 19 questions that for the most part could be answered according to the following scheme:

1 = completely disagree
2 = partially disagree
3 = partially agree
4 = completely agree

The following table gives the averaged results. The following abbreviations were used:

N-tot = number of users that answered this question
N = number of users who gave this particular answer
% = percentage of users who gave this answer (N/N-tot)
AVR = average score (1 to 4)
SD = standard deviation of the answers
Min = minimum score given
Max = maximum score given
CV = control variables

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
1a.	Were there sufficient reasons for implementing a performance management system? Options:							
	▪ Lack of operational data	37	12	32.4				
	▪ Lack of insight into the execution of the strategy	37	6	16.2				
	▪ Lack of insight into the results of crucial organizational processes	37	23	62.2				
	▪ Reporting not enough action oriented	37	6	16.2				
	▪ Lack of insight into developments in the market (competition, customer focus)	37	4	10.8				
	▪ Other							

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
1b.	What was, according to you, the main goal of implementing a performance management system? Options:							
	▪ There was a relationship with implementing the new strategy	37	1	2.7				
	▪ For accountability purposes	37	1	2.7				
	▪ For benchmarking purposes	37	1	2.7				
	▪ Not clear	37	0	0.0				
2	I had a positive attitude toward the implementation of the performance management system, CSFs, CVs, and BSC.	37			3.4	0.86	1	4
3	I was (actively) involved during definition making of the CVs.	37			1.8	0.91	1	4
4	I was sufficiently involved during the final choosing of the CVs.	37			1.8	0.88	1	4
5	What percentage of the total data needed in the performance management system is manually provided by you:							
	▪ More than 75%	37	0	0.0				
	▪ Between 25 and 75%	37	14	37.8				
	▪ Less than 25%	37	23	62.2				
6	The time my subordinates and I spend on collecting data for KPI reporting is acceptable.	37			3.2	0.62	2	4
7	I was sufficiently involved during the setting of targets for the CVs.	37			2.4	1.06	1	4
8	My suggestions and wishes for changes in the CSF/KPI set have been sufficiently implemented.	37			1.8	0.80	1	3
9	The current CSF/KPI set measures the strategic goals of the organization adequately.	37			2.5	0.77	1	4
10	There exists an unambiguous relationship between the CSF/KPI set and the crucial business activities of the organization.	37			2.6	0.75	1	4
11	The current CSF/KPI set is an adequate reflection of my responsibility area.	37			2.5	0.80	1	4
12	The manner in which the performance management system reports and shows CSFs, CVs, and BSC is understandable and easily accessible.	37			2.7	0.78	1	4
13	The reported results are reliable.	37			2.9	0.74	1	4
14	I am sufficiently involved during the making of analyses.	37			3.5	0.65	2	4
15	How often do you discuss the KPI results with other people in the organization?							
	▪ Once per month	37	29	78.4				
	▪ Once per quarter	37	6	16.2				
	▪ Less than once per month	37	2	5.4				

No.	Questions	N-tot	N	%	AVR	SD	Min	Max
	▪ Other time frame							
16	I currently have a positive attitude toward the use of the performance management system, CSFs , CVs, and BSC.	37			3.6	0.76	1	4
17	The performance management system, CSFs, CVs, and BSC play an import role during my activities.	37			3.2	0.89	1	4
18	My results and those of my subordinates have improved as a consequence of using the performance management system.	37			2.7	0.74	1	4
19	Room for additional remarks:							
–	Some indicators are not calculated in the right way.	10	1	10.0				
–	Do not see the indicators as the end, they are a means to obtain a first impression/quick scan, on the basis of which additional analysis can take place.	10	3	30.0				
–	The indicators should be defined, calculated and applied in a standardized way throughout the organization, so mutual comparison of targets and results can take place.	10	2	20.0				
–	The indicators should be periodically reviewed.	10	3	30.0				
–	The CV method should also be introduced locally.	10	1	10.0				
–	The CVs do not tell the whole story.	10	1	10.0				
–	The CV information should be absolutely reliable.	10	2	20.0				
–	Managers have to be able to influence the CVs.	10	1	10.0				

Results of Kadaster Interviews

The following table contains a summary of the answers given during the interviews at Kadaster. Not all questions in the interview list have been answered, these are indicated with a – in the last column.

A. Starting Point		
2	When did the company start with the development of the performance management system project? Was this, according to you, a right moment? If yes, why? If no, why not?	Most managers pinpointed the same starting time of the project, which was considered to be the right time. The development of CVs was seen as the next logical step in developing a new, improved financial "toolbox", which was needed for the new, independent status of the organization.
3	Were you involved in the decision making of the performance management system project? If yes, in what way? If no, why not?	The decision was taken at head office by the board of directors. The branch managers were hardly involved.
4	Did you have earlier experiences with performance measurement? If yes, what kind? Was this a positive or a negative experience? Which effect had this experience on your attitude toward the development of CSF/KPIs?	Performance management was completely new for the branches. Kadaster had had some experience with performance measurement but not with using these measures for management and control purposes.

5	Do you think that the use of CSF/KPIs is important for the continuity of the organization? If yes, why? If no, why not?	The need for performance management was clearly acknowledged by the managers. Most of them regarded the indicators as excellent tools to gain quicker and better insight into their performance.
33	How do you describe the environment in which you work in the organization (stable/turbulent)? Why?	There existed a turbulent environment because at that time Kadaster was transforming from a governmental agency to an independent agency.
B. Development of the Performance Management System		
8	Do the current CSFs and CVs measure the strategy of the company? If yes, which CSFs and CVs? If no, why not?	The (execution of the) strategy was not measured by the CVs. At the start of the performance management system project there existed a clear relationship between strategy and CVs. However, the CV set had not been updated since, so it did not represent Kadaster's strategy adequately any more.
9	Do you agree that the right CVs are chosen for your responsibilities inside the company?	The branch managers did not choose any CVs, so these did not explicitly match their responsibilities.
10	Does there, according to you, exist a clear relationship between the CSFs and CVs and the (crucial) business activities of the company? If yes, which? If no, why not?	Opinions were divided on this. In general, it seemed there was no clear relationship between business activities and CVs.
12	Were you satisfied with your degree of involvement in the performance management system development process? How much and what role did you play (active/passive)?	The project was managed from head office. A project team, which included several branch managers and branch controllers and personnel from head office, developed the CVs. No other people were involved.
13	Were you involved in the development of the definitions of the CVs? If yes, how?	Managers who were not part of the project team were not at all involved in the development of CV definitions. The project team asked the opinion of several branch controllers only after the definitions had been developed.
14	Are you involved in the determination of the content and the layout of the performance management system and CV reports?	Managers who were not part of the project team were not at all involved in the development of the layouts for the CV reports.
15	Who are, according to you, the initiator and promoter of the performance management system project? How do you judge/criticize their role?	The organization did not name one clear promoter. Some people thought that several persons (from head office) sponsored the project.
32	Do you accept the responsibility for the CVs that are appointed to you?	-
34	How much time (in hours and as a percentage of his time) did the promoter spend on the project?	-
38	Do you know the ins and outs of the definitions and how are the definitions available? How often are they changed?	-

41	How often, during the performance management system project, were you kept informed about the progress of the project? Did you appreciate this communication? If yes, why? If no, why not?	Communication to the branches about the CV development only took place after the CVs had been developed. This was done on purpose because it was felt by the board that involvement of the branches would slow down the project. In addition, the CVs were meant initially for the board itself.
42	Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? How often do conflicts take place about this set with them?	Only limited information that is important to external stakeholders was included.
43	What, in your opinion, was the focus during the development of the CSFs and CVs: external or internal?	The focus was internally.
44	How often did you yourself contribute to the communication?	Most managers were not involved in the project.
45	During the communication, were you asked for feedback? Give examples.	Most managers were not involved in the project.
46	Was something done with the feedback you gave? Give examples.	Most managers were not involved in the project.
47	Do the developed CSFs and CVs give you a clear (good) view of all of the important aspects of your operating (management) level?	The CVs were mainly developed for the board, so they did not specifically match aspects of branches' operations.
48	What was, according to you, the point of view of the development of CSFs and CVs, internal or external?	The point of view of the development of CVs was mainly internal. Only limited information that is important to external stakeholders was included.
	C. Use of the Performance Management System	
6	Do you find the use of the performance management system important for your role as manager? If yes, why? If no, why not?	In general, managers viewed the CVs as important tools to obtain a quick insight into their business activities. However, many managers needed additional information, like gap analysis between targets and actuals in order to exercise direct control.
11	Does any cause–and–effect relationship exist between the CVs? If yes, how much? If no, why not?	The CVs were developed with the board in mind, therefore branch managers could not (directly) relate cause and effect of their own activities. In addition, no clear relationships were defined between the CVs themselves.
16	Did you make any suggestions for changes in the performance management system? If yes, were these suggestions taken into account?	Managers have made suggestions for change in the CV set, however, this turned out to be a difficult route. The changes had to be presented to the board due to standardization across Kadaster, who then decided on implementation. This took often quite a long time, so the original CV set was hardly adjusted.
17	To whom do you report your CSF/KPI results? Does he or she also work with the performance management system, CSFs, CVs, and BSC? Is this, according to you, adequately visible (for the others) in the company?	Every month the managers discussed the CV report in the branch. Every quarter the CV reports were discussed between branch and the board. In this way, the branch managers and the board made quite visibly to the organization use of the CVs.

19	Do you recognize any relationship between the results of the CVs and the actions and the financial results of the company? If yes, are you able to quantify this relationship, and how do you do this? If no, why not?	Relationships between the results of the CVs and the actions and the financial results of the company were not formally identified. Through working with the CVs, managers discovered these relationships themselves. Employees did not recognize these relationships.
20	Were you satisfied with the degree of involvement in the development of forecasts/prognosis? If yes, how do you make these forecasts/prognosis?	Many interviewees did not understand the concept of forecasts. These were not formally installed at Kadaster.
21	Do you feel threatened by the results of the indicators? If yes, why? If no, why not?	Performance management was not seen as threatening at Kadaster. There existed a culture of openness and improvement in the organization. The CVs were seen as a tool to achieve continuous improvement. If results on CVs were bad, most managers had an explanation for this. If there was not a good explanation, then there was a certain degree of evasiveness on the part of the managers.
22	Do conflicts about the results of the indicators take place in your company?	There were hardly any conflicts about the results of the CVs. This was mainly caused by the continued good results of Kadaster in the last few years.
23	Are there CVs for which more than one manager is responsible for the results? If yes, how are possible conflicts relating to the determination of responsibilities solved?	For each CV, one manager was made responsible.
24	Does there exist, according to you, a familiar relationship (of mutual trust) between you and your boss/managers/employees?	There was mutual trust between managers and superiors, and between managers and subordinates.
25	How do you control your employees/managers (strict/loose)? How are you controlled by your boss?	The board drafted management guidelines for the branches and departments. These guidelines were executed autonomously by the managers. Managers on their part gave fairly much freedom to their employees.
26	Do you see any advantages or disadvantages of performance measurement in the way the people in the company are directed? If yes, what are these (dis)advantages? If no, why not?	Managers recognized the following benefits: structuring of discussions, keeping control on the execution of strategy and policies, gaining quick insight into their performance.
28	How open are you in making your analysis? How serious is the conversation about the analysis of the results?	Analyses were made for the quarterly meetings with the board, for those CVs that did not reach target. These analyses were fairly open because people in the organization were honest with each other. Deviations were researched and discussed extensively, in an open way.
29	Does someone talk to you about the results of the CSFs and CVs concerning your responsibilities? Do you talk to your employees about their results?	Managers were quarterly spoken to by the board on their CV results. Employees were monthly spoken to by their branch manager, on the CV results.
30	How much time do you spend on working with the performance management system - CVs every time? Do you find this time enough?	Time spent on working with the CVs varied from 30 minutes to several days per month. This was considered adequate by the managers.

35	Does a connection exist between the results of the performance management system and your personal rewards? Are you happy with this connection? If yes, why? If no, why not?	There was no direct link between the results of the CVs and managers' rewards. Yearly, a "Rewarding Results Award" was given to the best performing branch, the CVs formed a small part of the judgement criteria.
39	How do you characterize the culture in your company (a culture of improvement or of settlement)? Why? Give examples.	The organization was characterized by an improvement culture. Managers tried consciously to improve the results on CVs.
50	To what degree do you determine actions on the CSFs and CVs results? If yes, can you give an example? If no, why not?	Half of the interviewees based their actions on the information gained from the CVs.
51	Are the actions you take, now better (more effective), compared to earlier times?	For most managers it was still unclear whether their actions were improved on the basis of working with CVs.
53	To what extent do you use the CVs for comparison of your results with: (a) other units of the company and (b) other companies? If used for comparison, what are the advantages? If not used for comparison, why not?	The CVs were used to mutually compare the performance of the branches. This increased the motivation of the branches. Branches were also better able to learn from each other.
54	Do you frequently make an analysis of the results of the CSF and CVs? If yes, how do you make this analysis?	Analyses were made for the quarterly meetings with the board, for those CVs that did not reach target. How these analyses were made did not become clear to the researchers.
55	For how long did you work together with your employees/boss? Does this have any positive or negative influence on your attitude about the implementation of the performance management system? Why?	-
56	Do you experience the comparison of company results as a threat? If yes, why?	The comparison of CV results by means of the so-called ranking list was not seen as threatening. Most branches were interested in the reasons for performance differences.
58	Do discussions about the reliability of the performance management system frequently take place in the organization?	There were regularly discussions about the reliability of the CVs. This was mainly caused by inaccurate definitions of CVs.
59	In time, did the results of the forecasts compared to the real results improve?	Many interviewees did not understand the concept of forecasts. These were not formally installed at Kadaster.
D. Successful Use of the Performance Management System		
18	Do you frequently use the performance management system? How do you use it?	The CV reports were generated every month and discussed in the management team of the branches. Every quarter, the reporting was discussed between the board and the branches. The CV reports had a signal/warning function and an accountability purpose from the branches toward the board. For control of internal branch processes the CV reports did not contain enough detailed information.

27	Do the managers talk frequently to each other about the results of the CSFs and CVs? If yes, how often? If no, why not?	The CV reports were discussed monthly in the management team of the branches. Every quarter, the reporting was discussed between the board and the branches. Focus was on the exceptions (scores under index 100). Apart from the discussions at these formal meetings, there were hardly any other discussions about the CVs.
31	Has your performance improved through the use of the performance management system?	
36	In time, did you make more or less use of the performance management system and why?	For most managers, the use of the CVs has stayed the same or has increased slightly. The quality of the discussions about the CVs has increased. The trust in the reliability and the applicability of the CVs has increased.
37	Are there, according to you, any future plans for the continuation of the performance management system project? If yes, what plans are made? If no, why not?	About half of the interviewees knew about follow-up plans regarding the CVs. The other half had heard rumors or had suggestions for follow-up projects.

Results of Kadaster Document Research

B. Development of the Performance Management System		
11	Can an unambiguous and clear link between the CVs and the business functions/activities be found in the performance management system and reporting set?	The relationship between the CVs and the business functions/activities was not documented in the reports.
20	To what extent are colors used in the performance management system and reporting set?	No colors were used in the CV report. There were some colors in the internal branch reports.
21	To what extent are tables used in the performance management system and reporting set?	Some tables in the CV report. Many tables in the internal branch reports.
22	To what extent are graphs used in the performance management system and reporting set?	Two graphs in the CV report. A varying number of graphs in the internal branch reports.
23	To what extent are targets used in the performance management system and reporting set?	No targets in the CV report. Many targets (set on index 100) in the internal branch reports.
24	To what extent are standards layouts used in the performance management system and reporting set?	The CV report had a standard layout. Varied layouts of the internal branch reports.
25	What is the appearance of the performance management system and reporting set? Is it understandable and easily accessible?	The accessibility of the CV and branche reports varied because there were not many explanations, analyses and forecasts included.
27	Are responsible managers appointed for all CSFs and CVs?	The accountable managers were not mentioned in the reports.
28	Is one manager responsible for each KPI?	The accountable managers were not mentioned in the reports.
36	Can an unambiguous and clear link between the CVs and the strategy be found in the performance management system and reporting set?	The link between the CVs and the strategy was clearly documented in the first reports issued at Kadaster. However, the link became less clear through time.
37	Is there a separate CSF/KPI set for each management level?	Each management level was supposed to have its own specific set, in the recalibrated CV sets.

38	Is there a separate external reporting set, or is the internal reporting set also used for external reporting purposes?	The CV reports are part of the internal management reporting at Kadaster, and could be used for external purposes.
C. Use of the Performance Management System		
12	Are analyses and progress and results of actions incorporated in the performance management system?	The CV reports did not contain analyses and actions.
19	How often (per month/year) are forecasts made?	The CV reports did not contain forecasts.
29	Are financial consequences of actions mentioned in the performance management system?	The CV reports did not contain the financial consequences of actions.
30	What is the quality of the analyses, as seen in the performance management system?	The CV reports did not contain analyses.
31	Does mutual comparison of results take place between the managers (ranking)?	A ranking list that included the CV results of all branches was compiled monthly.
32	Are forecasts improved in comparison to the actuals?	The CV reports did not contain forecasts.
34	Are evaluations of the performance management system available? If yes, evaluate the quality of these evaluations.	An evaluation was made of the CVs, resulting in a recalibrated CV set.
35	Are CVs part of the yearly planning cycle?	-
D. Successful Use of the Performance Management System		
8	Have the results of the company improved as a consequence of using the performance management system? If yes, how much improvement (in percentages) has been realized? If no, why not?	The results on the CVs had clearly improved since 1993.
33	Review the plans (if available) for the next project phase.	There were no concrete plans for a follow-up. A recalibrated CV set was ready to be implemented at the end of the year. There were no further concrete plans for a follow-up project.
39	What is the number of users of the performance management system?	-
40	What is the frequency of use (number of times per month)?	The CV results were calculated in the branches once per month. The CV results were reviewed once per quarter at head office.
E. General Company Information		
1	Branch	Governmental agency, going to service provision.
2	National/International	National.
3	Independent/Part of a conglomerate	Independent.
4	Organizational structure	See Exhibit 4.12.
5	Mission/Strategy of the company: content, focus (clients, costs etc.), how long in place	See Section 4.3.1, *Description of Kadaster*.
6	Average age of management	Average age of personnel was 45 years. Average age of temporary personnel was 30 years.
7	Current situation: turnover, margin, number of employees, number of managers	Turnover: NLG 456.3 million; margin: NLG 89.3 million. Number of employees: 2093; managers: 145.

10	Percentage financial versus nonfinancial information	At the start, nine CVs were defined of which two were financial.
13	Number of CSFs and CVs defined	At the start, seven CSFs and nine CVs were defined. After the recalibration, four CSFs and ten CVs were defined.
14	Which kind of CSFs and CVs are used (strategic, functional/tactical/operational)?	At the start, nine strategic CVs were defined. The branches were allowed to define their own tactical and operational indicators.
15	Frequency of reporting	The CVs were reported monthly to the branches and quarterly to head office/the board of directors.
16	Are specific definitions and targets used?	Definitions only contained the calculations of the CVs and were not very specific. Targets for all the CVs have been set on 100 (indexed).
17	Are the definitions of the CVs documented? If yes, how?	The CV definitions have not been documented, except for the CV calculations.
18	Volume of the periodic reporting set (in number of pages)	The CV report to head office consisted of eight pages. The CV reports of the branches in general consisted of one or two pages. The CV report to the board consisted of two pages.
26	Name of the performance management system project	No special name was used.

Overview of Kadaster Final Results

For all the behavioral factors, the results from interviews, questionnaire and document research have been included in a single table. In the 'questionnaire' column the average score has been put in between brackets. On the basis of these results, the researchers awarded a final score to each behavioral factor. The definition of symbols is as follows:

+ = behavioral factor has been satisfied (in the opinion of the researchers)
0 = behavioral factor has been partially satisfied
– = behavioral factor has not been satisfied
NA = behavioral factor has either not been researched or not enough answers were obtained to make a judgement

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
Performance management system – Development method	Managers accept the need for performance management.	+ The need was clearly recognized	+ The majority of managers complained they did not have enough insight into critical processes in the current reporting	NA	+

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	Managers have an active role during the development stage of the performance management system project.	– Centrally managed project, CVs developed by project team	– (1.8)	NA	–
	Managers agree on the starting time.	+ There was clear agreement	NA	NA	+
	Managers have been involved in decision making about the project starting time.	0 Only the board decided, which was logical due to Kadaster's situation	NA	NA	0
	Managers are informed about the status of the performance management system project.	– Communication took place after defining the CVs, there were no discussions with managers about content en reporting layouts	NA	NA	–
	Managers are actively communicating about the performance management system project.	NA	NA	NA	NA
Performance management system – Content	Managers understand the meaning of KPIs.	NA	NA	NA	NA
	Managers are involved in defining KPIs.	– Project team made the definitions	NA	NA	–
	Managers have insight into the relationship between KPIs and financial results.	0 Through working with the CVs, relationships became clear	NA	– No financial consequences documented in reports	0
	Managers do not get discouraged by the collection of performance data.	NA	+ (3.2)	NA	+
	Managers have insight into the relationship between strategy and CSFs/KPIs.	0 CVs no longer represent the strategy	0 (2.5)	0 Current set didn't match, recalibrated set did	0
	Managers have insight into the relationship between business	0	0	–	0

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	processes and CSFs/KPIs.	Opinions were divided	(2.6)	No clear relationships were found in reports	
	Managers are involved in setting KPI targets.	NA	0 (2.4)	+ All CVs had a target	0
	Managers' KPI sets are aligned with their responsibility areas.	NA	0 (2.5)	NA	0
	Managers have insight into the relationship between cause and effect.	– No relationships were defined	NA	NA	–
Performance management system – Feedback	Managers are involved in forecasting.	0 Unclear about forecasts	NA	– No forecasts were found	–
	Managers trust good-quality forecasts.	NA	NA	NA	NA
	Managers' activities are supported by KPIs.	+ Managers regularly defined actions for CVs	NA	– Actions were not documented	0
	Managers' frames of reference contain similar KPIs.	+ CVs were used for mutual comparisons	NA	NA	+
	Managers are involved in making the CSF/KPI/BSC reporting layout.	– Layouts defined by project team	NA	NA	–
	Managers understand the CSF/KPI/BSC reporting.	NA	0 (2.7)	0 Head office used standard layout, branches did not	0
	Managers trust the performance information.	0 Many discussions about definitions	0 (2.9)	NA	0
	Managers are involved in making analyses.	+ Analyses were made regularly	+ (3.5)	NA	+
	Managers trust good-quality analyses.	+ Analyses were open	NA	– Analyses were not documented	0

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
Controlled system	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	NA	– (1.8)	NA	–
	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	+ Working time required for CVs was reasonable	NA	NA	+
	Managers have enough time to work with their CSFs/KPIs/BSC.	NA	NA	NA	NA
	Managers have earlier (positive) experiences with performance management.	0 No previous experience, but positive attitude	NA	NA	0
	Managers realize the importance of CSFs/KPIs/BSC to their performance.	+ Importance for organization was recognized	+ (3.2)	NA	+
	Managers do not experience CSFs/KPIs/BSC as threatening.	+ Not seen as threatening	NA	NA	+
	Managers can use their CSFs/KPIs/BSC for managing their employees.	+ CVs were used for managing employees	NA	NA	+
Controlling system	Managers can influence the KPIs assigned to them.	NA	NA	NA	NA
	Managers have sole responsibility for a KPI.	+ Each CV had a responsible manager	NA	NA	+
	Managers accept the promoter.	0 There was a promoter, but not recognized by the organization	NA	NA	0
	Managers see the promoter spends enough time on the performance management system implementation.	0 Promoter spent time on-and-off	NA	NA	0
	Managers clearly see the promoter using the performance management system.	0 Promoter used CVs but only quarterly	NA	NA	0

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score
	Managers and their controlling systems have a mutual trust.	+ There was mutual trust and loose control	NA	NA	+
Internal environment	Managers find the performance management system relevant due to regular evaluations.	– Only one ad hoc evaluation	NA	0 After five years of use, one recalibration	–
	Managers use the performance management system regularly during the planning and control cycle.	– CVs were not part of the planning cycle	NA	NA	–
	Managers agree on changes in the CSF/KPI set.	0 Suggestions were made, these receive limited follow-up	– (1.8)	NA	–
	Managers are stimulated to improve their performance.	+ Culture of improvement	NA	NA	+
	Managers work in a stable, relatively tranquil environment.	0 Environment was dynamic. However, manager had enough time to work with CVs	NA	NA	0
	Managers' results on CSFs/KPIs/BSC are openly communicated.	+ CV results were compared	NA	+ CV branch ranking list	+
	Managers' use of the performance management system is stimulated by the reward structure.	– No direct link	NA	NA	–
External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	+ Some important data were included in CVs	NA	NA	+
	Managers find the performance management system relevant because it has a clear internal control purpose.	+ Clear internal control	NA	+ CV reports were part of regular management reporting	+

APPENDIX G: DETAILED RESULTS FOR EIS

This appendix gives the detailed results and the document with the final scoring for EIS

Results of EIS Questionnaire

No questionnaire was used at EIS.

Results of EIS Interviews

The following table contains a summary of the answers given during the interviews at EIS. Not all questions in the interview list have been answered, these are indicated with a – in the last column.

A. Starting Point		
2	When did the company start with the development of the performance management system project? Was this, according to you, a right moment? If yes, why? If no, why not?	There was a clear starting point for the performance management system project. Managers saw the project as a logical next step after the financial control project. Managers felt the planning and control cycle of the unit needed "an upgrade", which could be provided by the CSFs and KPIs.
3	Were you involved in the decision making of the performance management system project? If yes, in what way? If no, why not?	The managers were involved, through meetings and discussions, in the decision-making process surrounding the performance management system project.
4	Did you have earlier experiences with performance measurement? If yes, what kind? Was this a positive or a negative experience? Which effect had this experience on your attitude toward the development of CSF/KPIs?	All the managers had previous experience with performance management and the BSC. These experiences were all positive, so there was a positive attitude toward the performance management system project. Managers saw a valuable tool for signaling bad performance of their departments.
5	Do you think that the use of CSF/KPIs is important for the continuity of the organization? If yes, why? If no, why not?	Managers saw the use of CSF/KPIs as important for the continuity of the unit as long as a limited and concise set of indicators would be used.
33	How do you describe the environment in which you work in the organization (stable/turbulent)? Why?	Several change processes, among which a financial control project, were going on at the starting time of the performance management system project. This meant the managers had limited time to spend on the project.

B. Development of the Performance Management System		
8	Do the current CSFs and KPIs measure the strategy of the company? If yes, which CSFs and KPIs? If no, why not?	There was no explicit relationship between the CSFs and KPIs and the strategy. In addition, there was confusion about the nature and definition of the strategic objectives of the unit. Finally, managers didn't use the working document in which the relationship between the CSFs and KPIs and the strategy was (limited) documented.
9	Do you agree that the right KPIs are chosen for your responsibilities inside the company?	-
10	Does there, according to you, exist a clear relationship between the CSFs and KPIs and the (crucial) business activities of the company? If yes, which? If no, why not?	There existed a clear relationship between the CSFs and KPIs and the (crucial) business activities of the unit, caused by the focus managers put on these activities.
12	Were you satisfied with your degree of involvement in the performance management system development process? How much and what role did you play (active/passive)?	The managers were highly involved in the performance management system development process by participating in workshops and reviewing documents made by the project team. They were not part of the project team.
13	Were you involved in the development of the definitions of the KPIs? If yes, how?	The managers were highly involved in defining the KPIs by participating in workshops and reviewing documents made by the project team.
14	Are you involved in the determination of the content and the layout of the performance management system and CSF/KPI reports?	The managers were highly involved in defining the content and the layout of the performance management system and CSF/KPI reports by participating in workshops and reviewing documents made by the project team.
15	Who are, according to you, the initiator and promoter of the performance management system project? How do you judge/criticize their role?	The Finance & Planning (FA) manager was recognized and accepted as the sponsor of the performance management system project.
32	Do you accept the responsibility for the KPIs that are appointed to you?	Managers accepted responsibility for those indicators that they could directly influence themselves.
34	How much time (in hours and as a percentage of his time) did the promoter spend on the project?	The sponsor only spent limited time on the project because he was of the opinion that the indicators were mainly for the benefit of the departments so they should not be influenced too much by his opinion.
38	Do you know the ins and outs of the definitions and how are the definitions available? How often are they changed?	Managers knew the short KPI definitions that were mentioned in the CSF/KPI reports. They did not know the extended definitions that were documented in the definition document.
41	How often, during the performance management system project, were you kept informed about the progress of the project? Did you appreciate this communication? If yes, why? If no, why not?	There was regular communication in the unit about the progress of the project. This communication came in the shape of workshops and several meetings.
42	Who are the external stakeholders? To which degree do they have an influence on the content of the CSF/KPI set? How often do conflicts take place about this set with them?	-

43	What, in your opinion, was the focus during the development of the CSFs and KPIs: external or internal?	The performance management system was developed with a clear internal control purpose in mind.
44	How often did you yourself contribute to the communication?	-
45	During the communication, were you asked for feedback? Give examples.	-
46	Was something done with the feedback you gave? Give examples.	-
47	Do the developed CSFs and KPIs give you a clear (good) view of all of the important aspects of your operating (management) level?	The Financial Accounting (FA) indicators were a good reflection of the important aspects of the FA department. The Commercial Services (CS) department had several less relevant indicators that were difficult to measure, so here there was a less clear view.
C. Use of the Performance Management System		
6	Do you find the use of the performance management system important for your role as manager? If yes, why? If no, why not?	Managers saw the CSFs and KPIs as important tools for a better control of crucial business activities and for providing a structured insight into the areas where improvements were needed.
11	Does any cause–and–effect relationship exist for the KPIs? If yes, how much? If no, why not?	No explicit cause–and–effect relationships were defined.
16	Did you make any suggestions for changes in the performance management system - CSFs and KPIs? If yes, were these suggestions taken into account?	Regularly, suggestions for updating the FA indicator set were made for which consensus existed, and changes were made. This was not the case for the CS indicators.
17	To whom do you report your CSF/KPI results? Does he or she also work with the performance management system, CSFs, KPI, and BSC? Is this, according to you, adequately visible (for the others) in the company?	The CSF/KPI results were regularly discussed with the F& P manager. It was unclear to the researchers what the quality of these discussions were. The fact that the F&P manager also used the indicators was unknown to the employees in the unit, partly because the manager did not give direct feedback about the results to the employees.
19	Do you recognize any relationship between the results of the KPIs and the actions and the financial results of the company? If yes, are you able to quantify this relationship, and how do you do this? If no, why not?	Managers did not have insight into the relationship between the results of the KPIs and the actions and the financial results of the unit. These relationships were not defined.
20	Were you satisfied with the degree of involvement in the development of forecasts/prognosis? If yes, how do you make these forecasts/prognosis?	-
21	Do you feel threatened by the results of the indicators? If yes, why? If no, why not?	The results of the indicators were not threatening to the managers. They used the indicators mainly as a basis for structuring discussions.
22	Do conflicts about the results of the indicators take place in your company?	The results of the indicators were not often discussed in the departments, so there were not many discussions.

23	Are there KPIs for which more than one manager is responsible for the results? If yes, how are possible conflicts relating to the determination of responsibilities solved?	For each KPI, a so-called KPI custodian was appointed. There were no KPIs with more than one responsible manager. There were KPIs that could be influenced by more than one manager, but this did not result in discussions.
24	Does there exist, according to you, a familiar relationship (of mutual trust) between you and your boss/managers/employees?	-
25	How do you control your employees/managers (strict/loose)? How are you controlled by your boss?	-
26	Do you see any advantages or disadvantages of performance measurement in the way the people in the company are directed? If yes, what are these (dis)advantages If no, why not?	Managers recognized many benefits, like being better able to structure discussions with subordinates, obtaining better insight into the performance of the department and its people, and getting a better feel for which the opinion of their employees.
28	How open are you in making your analysis? How serious is the conversation about the analysis of the results?	Managers regularly made analyses. These were in general open, but not very specific.
29	Does someone talk to you about the results of the CSFs and KPIs concerning your responsibilities? Do you talk to your employees about their results?	The use of indicators was rather noncommittal. Managers were not regularly and structurally spoken to on their results by the F&P manager.
30	How much time do you spend on working with the performance management system every time? Do you find this time enough?	The time spent on working with the performance management system varied. Some managers had enough time, others did not because too many operational things interfered.
30a	Are you able to spend enough time (effort) working with the performance management system - KPIs, compared to your other activities in the company?	Opinions differed on this.
35	Does a connection exist between the results of the KPIs and your personal rewards? Are you happy with this connection? If yes, why? If no, why not?	There was no clear link found between the results of the KPIs and the reward structure.
39	How do you characterize the culture in your company (a culture of improvement or of settlement)? Why? Give examples.	The culture could be characterized as an “accountability and blame” culture.
50	To what degree do you determine actions on the CSFs and KPIs results? If yes, can you give an example? If no, why not?	Actions were mainly defined for the FA indicators. Hardly any actions were defined for the CS indicators. The F&P manager did not define any actions for the departments on the basis of the KPI results.
51	Are the actions you take, now better (more effective), compared to earlier times?	-
53	To what extent do you use the CSFs and KPIs for comparison of your results with: (a) other units of the company and (b) other companies? If used for comparison, what are the advantages? If not used for comparison, why not?	Some KPIs were compared across the sites. However, this turned out to be difficult because operating procedures and local circumstances differed quite a bit.
54	Do you frequently make an analysis of the results of the CSF and KPIs? If yes, how do you make this analysis?	Managers regularly made analyses.

55	For how long did you work together with your employees/boss? Does this have any positive or negative influence on your attitude about the implementation of the performance management system? Why?	-
56	Do you experience the comparison of company results as a threat? If yes, why?	-
58	Do discussions about the reliability of the performance management system frequently take place in the organization?	In general, the information from the performance management system was considered to be reliable, so there were hardly any discussions about the reliability of the indicators.
59	In time, did the results of the forecasts compared to the real results improve?	-
D. Successful Use of the Performance Management System		
18	Do you frequently use the performance management system? How do you use it?	The FA indicators were used regularly. The CS indicators were hardly used because managers experienced a too high work pressure (due to personnel problems), were less enthusiastic about the KPIs, and due to the lack of ownership of the CS department head.
27	Do the managers talk frequently to each other about the results of the CSFs and KPIs? If yes, how often? If no, why not?	The FA indicators were regularly discussed in the management team of the unit. They were hardly discussed with FA personnel. The CS indicators were hardly discussed, neither in the management team nor with CS personnel.
31	Has your performance improved through the use of the performance management system?	It seemed the results of FA were improving, and those of CS were decreasing. It was not clear whether this was because of performance management system use or because of other factors (like personnel problems at CS).
36	In time, did you make more or less use of the performance management system and why?	The frequency of use of FA indicators was about the same or had slightly increased. The frequency of use of CS indicators had decreased because less people got interested in the CS KPIs and because there were only four (of the original 17) CS indicators left.
37	Are there, according to you, any future plans for the continuation of the performance management system project? If yes, what plans are made? If no, why not?	There were no formal follow-up plans for the performance management system.

Results of E.I.S Document Research

B. Development of the Performance Management System		
11	Can an unambiguous and clear link between the CSFs and KPIs and the business functions/activities be found in the performance management system and reporting set?	The CSFs and KPIs were directly derived from the business functions and activities of the departments.
20	To what extent are colors used in the performance management system and reporting set?	Colors were extensively used, both for the FA and CS indicators.

21	To what extent are tables used in the performance management system and reporting set?	Tables were extensively used, both for the FA and CS indicators, containing information on the (short) KPI definition, the KPI target, the defined analysis and defined actions.
22	To what extent are graphs used in the performance management system and reporting set?	Graphs were extensively used, both for the FA and CS indicators.
23	To what extent are targets used in the performance management system and reporting set?	Targets were set, both for the FA and CS indicators.
24	To what extent are standards layouts used in the performance management system and reporting set?	Standards layouts were used, both for the FA and CS reports.
25	What is the appearance of the performance management system and reporting set? Is it understandable and easily accessible?	The extensive use of graphs, tables and colors made the reports quite accessible.
27	Are responsible managers appointed for all CSFs and KPIs?	The KPI custodians were not mentioned in the reports.
28	Is one manager responsible for each KPI?	The KPI custodians were not mentioned in the reports, so this information could not be abstracted from the reports.
36	Can an unambiguous and clear link between the CSFs and KPIs and the strategy be found in the performance management system and reporting set?	The CSFs and KPIs were directly derived from the strategy of the departments. However, this was not clearly documented.
37	Is there a separate CSF/KPI set for each management level?	Everybody in the department used the same CSF/KPI set.
38	Is there a separate external reporting set, or is the internal reporting set also used for external reporting purposes?	There was a separate external report for the organization's management team.
C. Use of the Performance Management System		
12	Are analyses and progress and results of actions incorporated in the performance management system?	In the FA report, the analyses were documented, but the actions and their execution were not. In the CS report, the analyses nor the actions and their execution were documented.
19	How often (per month/year) are forecasts made?	No forecasts were made, for neither of the departments.
29	Are financial consequences of actions mentioned in the performance management system?	Financial consequences of actions were not mentioned in the reports, for neither of the departments.
30	What is the quality of the analyses, as seen in the performance management system?	The analyses for the FA indicators were in general vague and not very specific. In addition, not all deviations from target were explained. No analyses were made for the CS indicators.
31	Does mutual comparison of results take place between the managers (ranking)?	Several FA indicators were compared for the sites and the results were documented. No comparison took place for the CS indicators.
32	Are forecasts improved in comparison to the actuals?	No forecasts were made, for neither of the departments.
34	Are evaluations of the performance management system available? If yes, evaluate the quality of these evaluations.	No evaluations were made.

35	Are CSFs and KPIs part of the yearly planning cycle?	-
D. Successful Use of the Performance Management System		
8	Have the results of the company improved as a consequence of using the performance management system? If yes, how much improvement (in percentages) has been realized? If no, why not?	It seemed the performance of the unit stayed constant.
33	Review the plans (if available) for the next project phase.	There were no follow-up plans for the performance management system available.
39	What is the number of users of the performance management system?	-
40	What is the frequency of use (number of times per month)?	-
E. General Company Information		
1	Branch	Information technology
2	National/International	International.
3	Independent/Part of a conglomerate	Part of a conglomerate.
4	Organizational structure	See Exhibit 4.19.
5	Mission/Strategy of the company: content, focus (clients, costs etc.), how long in place	See Section 4.4.1, *Description of EIS*.
6	Average age of management	-
7	Current situation: turnover, margin, number of employees, number of managers	Total number of employees: 398.
10	Percentage financial versus nonfinancial information	-
13	Number of CSFs and KPIs defined	15 FA indicators and 17 CS indicators.
14	Which kind of CSFs and KPIs are used (strategic, functional/tactical/operational)?	FA: 7 functional, 6 operational, and 2 environmental indicators. CS: 9 functional, 6 operational, and 2 environmental indicators.
15	Frequency of reporting	Monthly reporting. The CS reporting was not generated after June 1996.
16	Are specific definitions and targets used?	Specific definitions and targets were used, for both departments.
17	Are the definitions of the KPIs documented? If yes, how?	Specific definitions and targets were documented, for both departments.
18	Volume of the periodic reporting set (in number of pages)	One page, per department.
26	Name of the performance management system project	No special name.

Overview of EIS Final Results

For all the behavioral factors, the results from interviews, questionnaire and document research have been included in a single table. In the 'questionnaire' column the average score has been put in between brackets. On the basis of these results, the researchers awarded a final score to each behavioral factor. The definition of the symbols is as follows:

+ = behavioral factor has been satisfied (in the opinion of the researchers)
0 = behavioral factor has been partially satisfied
– = behavioral factor has not been satisfied
NA = behavioral factor has either not been researched or not enough answers were obtained to make a judgement

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score	
Performance management system – Development method	Managers accept the need for performance management.	+ The need was clearly recognized	NA	NA	+	+
	Managers have an active role during the development stage of the performance management system project.	+ Managers had an active role	NA	NA	+	+
	Managers agree on the starting time.	+ Logical next step in upgrade of planning and control cycle	NA	NA	+	+
	Managers have been involved in decision making about the project starting time.	+ Good involvement	NA	NA	+	+
	Managers are informed about the status of the performance management system project.	+ Regular communication	NA	NA	+	+
	Managers are actively communicating about the performance management system project.	NA	NA	NA	NA	NA
Performance management system – Content	Managers understand the meaning of KPIs.	0 Good knowledge about short definitions, not about long definitions	NA	+ All KPIs described in short and long definition documents	+	+
	Managers are involved in defining KPIs.	+ Good involvement	NA	NA	+	+

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score	
	Managers have insight into the relationship between KPIs and financial results.	– No insight existed	NA	– Actions and financial consequences were not documented	_	_
	Managers do not get discouraged by the collection of performance data.	NA	NA	NA	NA	NA
	Managers have insight into the relationship between strategy and CSFs/KPIs.	– No insight existed	NA	– Relationships were not documented	–	–
	Managers have insight into the relationship between business processes and CSFs/KPIs.	+ Insight existed	NA	+ Functional and operational KPIs were defined	+	+
	Managers are involved in setting KPI targets.	+ Good involvement	NA	+ Specific targets were present	+	+
	Managers' KPI sets are aligned with their responsibility areas.	NA	NA	NA	NA	NA
	Managers have insight into the relationship between cause and effect.	– No links were defined	NA	NA	–	–
Performance management system – Feedback	Managers are involved in forecasting.	NA	NA	– No forecasts were present	–	–
	Managers trust good-quality forecasts.	NA	NA	NA	NA	NA
	Managers' activities are supported by KPIs.	FA: 0; CS: – FA managers were fairly positive, CS managers were negative	NA	– No actions were present	0	–
	Managers' frames of reference contain similar KPIs.	FA: 0; CS: – Some comparisons were made for FA, none for CS	NA	0 Comparisons were documented for FA, not for CS	0	–
	Managers are involved in making the CSF/KPI/BSC reporting layout.	+ Good involvement	NA	+	+	+
	Managers understand the CSF/KPI/BSC reporting.	NA	NA	+ Colors, tables, standard formats etc. were used	+	+

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score	
	Managers trust the performance information.	FA: +; CS: – No discussions in FA, no use of reports in CS, so there was no basis for disagreements	NA	NA	+	–
	Managers are involved in making analyses.	FA: +; CS: – Analyses were made by FA, not by CS	NA	NA	+	–
	Managers trust good-quality analyses.	FA: 0; CS: – FA analyses were open but not very specific; no analyses were made at CS	NA	– Analysis of FA was of a rather high level; no analyses were made for CS	0	–
Controlled system	Managers use the CSFs/KPIs/BSC that match their responsibility areas.	NA	NA	NA	NA	NA
	Managers' information processing capabilities are not exceeded by the number of CSFs/KPIs.	NA	NA	NA	NA	NA
	Managers have enough time to work with their CSFs/KPIs/BSC.	0 Not too much time was available for working with performance management system	NA	NA	0	0
	Managers have earlier (positive) experiences with performance management.	+ Managers had positive previous experiences	NA	NA	+	+
	Managers realize the importance of CSFs/KPIs/BSC to their performance.	+ Importance was recognized	NA	NA	+	+
	Managers do not experience CSFs/KPIs/BSC as threatening.	+ Managers experienced no threat	NA	NA	+	+
	Managers can use their CSFs/KPIs/BSC for managing their employees.	FA: +; CS: 0 Benefits were recognized, especially in FA	NA	NA	+	0

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score	
Controlling system	Managers can influence the KPIs assigned to them.	+ Responsibility was accepted	NA	NA	+	+
	Managers have sole responsibility for a KPI.	+ KPI custodians were appointed	NA	0 KPI custodians were not mentioned in reports	+	+
	Managers accept the promoter.	+ Promoter was accepted	NA	NA	+	+
	Managers see the promoter spends enough time on the performance management system implementation.	– Limited time was spent	NA	NA	–	–
	Managers clearly see the promoter using the performance management system.	FA: +; CS: – FA indicators were regularly discussed, CS indicators not; Use by the promotor was not very visible.	NA	NA	+	–
	Managers and their controlling systems have a mutual trust.	NA	NA	NA	NA	NA
Internal environment	Managers find the performance management system relevant due to regular evaluations.	NA	NA	NA	NA	NA
	Managers use the performance management system regularly during the planning and control cycle.	NA	NA	NA	NA	NA
	Managers agree on changes in the CSF/KPI set.	FA: +; CS: – There was consensus on FA, but not on CS indicators	NA	NA	+	–
	Managers are stimulated to improve their performance.	FA: 0; CS: – A blame culture existed, especially at CS	NA	NA	0	–
	Managers work in a stable, relatively tranquil environment.	– There was a turbulent environment	NA	NA	–	–

Classification Scheme Part	Behavioral Factor	Interviews	Questionnaire	Document Research	Score	
	Managers' results on CSFs/KPIs/BSC are openly communicated.	FA: +; CS: 0 All the FA and some of the CS KPIs were put on a score board in hallway	NA	NA	+	0
	Managers' use of the performance management system is stimulated by the reward structure.	– No link	NA	NA	–	–
External environment	Managers find the performance management system relevant because only those stakeholders' interests that are important to the organization's success are incorporated.	+ Limited influence, information was used to report externally	NA	NA	+	+
	Managers find the performance management system relevant because it has a clear internal control purpose.	+ Clear internal control purpose	NA	+ Separate FA and CS reporting	+	+

APPENDIX H: SURVEY DOCUMENTS (PHASE II)

This appendix contains the three documents that were sent to the organizations that participated in the survey. The cover letter introduced the study and the questionnaire to the organization. The explanatory memo gave instructions how to fill out the questionnaire. The questionnaire contained the questions.

Cover Letter

Company
Contact
Address
Place

Rotterdam, March 1999

Topic: Participation in PhD study

Dear Sir, Madam,

During the last few years, a growing number of companies have introduced management control systems that are based on critical success factors and key performance indicators. A frequently encountered system in this respect is the Balanced Scorecard. Although experience with such systems is rapidly increasing, there is still a lot to learn about the ways in which such control systems can be employed and used (even) more effectively.

In order to increase our knowledge about these control systems, we started a PhD study at the Free University Amsterdam. Purpose of the study is to find the answer to the following research question:

What is the effect of behavioral factors on the successful implementation and use of management control systems that are based on critical success factors and key performance indicators

A condition is defined as something a person has to do in order to be successful. Behavioral factors are mostly noticeable in:

- the *involvement* of users of reports during the *development* of critical success factors and key performance indicators;
- the degree to which and the manner in which users are *accountable* for the results of performance indicators, and the way in which there is *communication* about these results in the organization;
- the moment at which the critical success factors and key performance indicators are *introduced* in the organization and the *situation* of the organization at that moment;
- the use of the critical success factors and key performance indicators for *steering* and *control* purposes.

Part of the PhD study is performed together with the Management Systems and Information department of City University Business School London and a graduate student of the Psychology department of Leiden University. This "consortium" is looking to distinguish those ***individual competencies*** and ***managerial behaviors*** that are important indications of whether a manager will use critical success factors, key performance indicators and/or the Balanced Scorecard for steering and control purposes.

At this moment, we are looking for prominent companies that would like to participate in our research. These should be companies that have used critical success factors, key performance indicators and/or the Balanced Scorecard for quite some time and that are interested to either increase the use or the quality of these control systems. Based on research at several prominent companies in the Netherlands and the United Kingdom, we would like to identify behavioral factors important for the successful use of performance indicators/Balanced Scorecard. In addition, we are looking for ways to improve the use of these systems. The participating companies will receive a copy of the research report (made by the graduate student) and, in time, a copy of the PhD dissertation (made by the undersigned). These reports can be used to review your own control systems.

The study at the your company would entail:

- a prediscussion with you, to further explain purpose and process of the research;
- review of currently used reports and performance indicators;
- completion of a questionnaire by (a selection of) managers in your company that use the control system, it will take approximately 20 minutes to fill in the questionnaire;
- interviews with a selection of managers (about 5) in your company to obtain additional information concerning the way these managers use the control system, the interviews will not take more than one hour.

The research is planned to take place in April and May of this year. All information that is obtained from the research at your company will be handled strictly confidentially. The name of your company will only be mentioned in publications after explicit approval from you. We hope your company is willing to participate in the research and we are looking forward to an interesting study!

Best regards,

FREE UNIVERSITY AMSTERDAM
drs. A.A. de Waal MBA

CITY UNIVERSITY BUSINESS SCHOOL LONDON
dr. C. A. Brady

Explanatory Memo

To: Management of Philips Lighting

Rotterdam, August 1999

Topic: **Participation in PhD research into Balanced Scorecard use**

Dear Sir, Madam,

We would like to ask your attention for the following. The questionnaire before you is part of a research project, conducted at several European companies, into the way managers control and manage their organizations and the management information they use for this purpose. The research is executed jointly by Arthur Andersen Business Consulting in the Netherlands, the Free University in Amsterdam and City University Business School in London. The research is part of a PhD study of the undersigned.

The overall results of the research will be reported to Philips Lighting. You can then tailor these results to improve, if necessary, the use of the management information used at Philips Lighting (i.e., the monthly and quarterly reports and the Balanced Scorecard). To obtain a good insight into the use of management information at Philips Lighting, we would very much like to hear your opinion. The information you provide us with will be treated confidentially. The questionnaire is filled in and processed anonymously. We thank you very much for your cooperation.

Guidelines

- Please answer *all* the questions.
- You can give only one answer to each question. If you have doubts about which answer to choose, please choose the answer that comes closest to your opinion.
- There are no right or wrong answers. We want to hear YOUR opinion!
- If you have any remarks about the questionnaire, please note them down on the last page.
- Answering the questionnaire will take approximately 30 minutes.
- Please send the questionnaire in a closed envelope before **August 20** to the secretary to Ms xxxx. She collects the questionnaires for us.

Definitions

In the questionnaire, terms and concepts are used that could be interpreted in more than one way. We therefore ask you to look at the definitions given underneath before filling in the questionnaire.

- Management information or management reporting = monthly report, quarterly report, the Balanced Scorecard.
- Performance measurement system = the planning and control system that generates among other things the monthly & quarterly reports and the balanced scorecard.
- Financial information = information expressed in guilders, dollars, or in other currency.
- Nonfinancial information = information not expressed in guilders, dollars, or in other currency.
- Quantitative information = information expressed in numbers, figures, tables, or graphs.
- Qualitative information = information expressed in other ways than numbers, figures, tables, or graphs, e.g. in text format.

With regards,

FREE UNIVERSITY AMSTERDAM
drs. A.A. de Waal MBA

Questionnaire Performance Evaluation:
how managers use information

Project team Performance Measurement
Version: June 1999

1 Personal data

1.1 Age
_____ years

1.2 Gender
O male
O female

1.3 How many years of experience do you have in your current profession?
_____ years

1.4 How many years of experience do you have in your current function?
_____ years

1.5 How many hours a week do you work?
_____ hours

1.6 How many hours a week do you spend on management tasks? (*It is quite possible that the answer to this question is equal to your answer to the previous question. If you do not only have managerial responsibility, but also take part in the primary processes of your organization, the number of hours will differ.)*
_____ hours

1.7 How many employees are you *directly* responsible for? *(If you are responsible for four persons, who in turn are responsible for ten persons each, you are directly responsible for four persons and indirectly for forty.)*
_____ employees

1.8 For how many employees are you *indirectly* responsible?
_____ employees

1.9 How many organizational units are under your *direct* responsibility?
_____ organizational units

1.10 How many organizational units are under your *indirect* responsibility?
_____ organizational units

2 Usage of the management information

2.1 How many hours do you spend on analyzing/studying the reports (excluding appendices) each time you receive one?

_____ hours

2.2 How many hours do you spend on analyzing/studying the appendices to the reports each time you receive the report?

_____ hours

O There are no appendices

2.3 Apart from the periodic reports, special investigations may take place in order to obtain more insight into the performance of your organizational unit. What is the importance of those investigations?

they are not carried out at all	*they are relatively unimportant*	*they are less important than the periodic reports*	*they are about as important as the periodic reports*	*they are more important than the periodic reports*
O	O	O	O	O

2.4 Some organizations provide managers the possibility to examine detailed transaction data of their own organizational unit by means of a special computer program. Do your have this possibility?

O No

O Yes, but I hardly use this possibility

O Yes, and I use it regularly

2.4 In order to exercise your function as a manager, do you mainly use financial or non-financial data?

almost only non-financial information	*both, but non-financial data are most important*	*the importance of both kinds of information is about equal*	*both, but financial data are most important*	*almost only financial information*
O	O	O	O	O

2.5 In order to exercise your function as a manager, do you mainly use quantitative or qualitative information?

almost only quantitative information	*both, but quantitative data are most important*	*the importance of both kinds of information is about equal*	*both, but qualitative data are most important*	*almost only qualitative information*
O	O	O	O	O

3 Appropriateness of information

3.1 Are financial or non-financial measures, in your opinion, most appropriate to present the performance of your organizational unit?

only non-financial measures are appropriate	*both, but non-financial measures are more appropriate*	*both are about as appropriate*	*both, but financial measures are more appropriate*	*only financial measures are appropriate*
O	O	O	O	O

3.2 Are quantitative or qualitative measures in your opinion most appropriate to present the performance of your organizational unit?

only qualitative measures are appropriate	*both, but qualitative measures are more appropriate*	*both are about as appropriate*	*both, but quantitative measures are more appropriate*	*only quantitative measures are appropriate*
O	O	O	O	O

3.3 How appropriate are, in your opinion, traditional measures like profits, ROI (return on investment) and traditional cost figures, for managing your organizational unit in comparison with new measures like activity-based costing, shareholders value analysis and EVA (economic value added)?

Traditional measures are sufficient	*traditional measures are reasonably sufficient*	*new measures complement traditional measures*	*new measures are as important as traditional measures*	*new measures are more important than traditional measures*
O	O	O	O	O

3.4 In order to exercise your function, is it necessary to monitor what is happening in the organization yourself (in other words your own observation of business processes) or do the regular management reports suffice?

for me, reports are almost useless, I completely depend on my own observation	*my own observations are most important, but the reports are of importance as well*	*my own observations and the reports are about as important*	*the reports are most important, but my own observations are important as well*	*I completely depend on the reports; my own observation plays an inferior part.*
O	O	O	O	O

4 Other sources of information

Apart from the official management information you might use information from other sources to exercise your function as a manager. In the following table a number of potential sources of information is mentioned. Could you for each of these sources indicate how important they are for exercising your function as a manager at the moment? *Would you please tick one alternative per source? If you do not use a source at all, tick the alternative "very unimportant".*

		very important	*important*	*somewhat important*	*unimportant*	*very unimportant*
4.1	Information from customers	O	O	O	O	O
4.2	Information from competitors	O	O	O	O	O
4.3	Information from suppliers	O	O	O	O	O
4.4	Information from your own social "network"	O	O	O	O	O
4.5	Information from television and radio	O	O	O	O	O
4.6	Information from newspapers	O	O	O	O	O
4.7	Information form internet	O	O	O	O	O
4.8	Information from your industry organization	O	O	O	O	O
4.9	Information obtained on congresses and	O	O	O	O	O
4.10	Information from professional journals	O	O	O	O	O

4.11 How important are the sources mentioned above compared with the official management reports provided by your organization for the adequate assessment of the performance of your organization or organizational unit?

much more important than the "official" reports	*more important than the "official" reports*	*as important as the "official" reports*	*less important than the "official" reports*	*far less important than the "official" reports*
O	O	O	O	O

5 Your organizational unit

5.1 How many written rules and procedures exist for the tasks in your organizational unit?

very few if any	*a small number*	*a moderate number*	*a large number*	*a great number*
O	O	O	O	O

5.2 How precisely do these rules and procedures specify how the tasks in your organizational unit are to be done?

very general	*mostly general*	*somewhat specific*	*quite specific*	*very specific*
O	O	O	O	O

5.3 How strictly are these rules and procedures enforced in your organizational unit?

not at all enforced	*Very loosely enforced*	*quite strictly enforced*	*strictly enforced*	*very strictly enforced*
O	O	O	O	O

5.4 How likely are you to notice it when those rules are broken?

very small	*small*	*not particularly large*	*large*	*very large*
O	O	O	O	O

6 Your employees

6.1 With which frequency do you evaluate the employees that fall under your responsibility? *(If the exact amount is not mentioned, please choose the most similar frequency. Once every four weeks becomes once a month in that case.)*

never	*at most once a year*	*once every half year*	*once every three months*	*once a month or more often*
O	O	O	O	O

6.2 Does your organizational unit use assessment centers and/or psychological tests?

- O yes, for all functions
- O yes, for a part of our personnel
- O no

6.2 Approximately what proportion of your employees is member of a professional organization?

hardly anyone	*less than 50%*	*about 50%*	*more than 50%*	*almost everyone*
O	O	O	O	O

6.4 How often do your employees on average take part in courses or other forms of (continuing) education?

hardly ever	*less than once every four years*	*at least once in four years*	*once a year*	*more often than once a year*
O	O	O	O	O

6.5 Is the management in your organization originating from the own organization (could one speak of "own breed"), or are mostly persons from outside the own organization appointed to management positions?

mostly originating from own organization	*about 75%is "own breed"*	*about 50% is "own breed"*	*about 75% is from outside the own organization*	*mostly external*
O	O	O	O	O

6.6 To what extent are you experienced in exercising the functions of your employees? *(If your are still working in the primary business process of your organizational unit, please check the first answer)*

I have experience in my own organizational unit	*I have experience elsewhere in my own organization*	*I have experience in another organization*	*I have theoretical, but no practical experience*	*I have no experience in these functions at all*
O	O	O	O	O

6.7 What is more important for the evaluation of the performance of your employees, their efforts or the results obtained?

only efforts count	*efforts are more important than results*	*both are equally important*	*results are more important than efforts*	*only results count*
O	O	O	O	O

6.8 If in your organizational unit a situation occurs in which a manager does not meet his/her budget, and the person involved is able to make clear that not meeting the budget is a consequence of decisions that will in the long run be better for the organization's performance as a whole than decisions made to meet the budget would have been, how would this manager be evaluated?

negatively, the budget has not been met	*negatively, but less severe than without the motivation provided*	*neutrally, the motivation provided compensates for not meeting the budget*	*positively, but not meeting the budget also counts*	*positively, the results of the organization as a whole will improve in the long run*
O	O	O	O	O

6.9 Do you take personal circumstances into account when evaluating your employees? *(With personal circumstances we indicate circumstances in the personal live of employees, items like an educational trajectory or change of function are not considered to be personal circumstances.)*

always	*most times*	*in about the half of cases*	*seldom*	*never*
O	O	O	O	O

6.10 Does your final evaluation have financial consequences for the employee involved? *(The term financial consequences is used to indicate situations in which the outcome of the evaluation is directly used to determine matters like change in salary or awarding (or denying) a bonus.)*

no, the evaluation does not have financial consequences	*the evaluation has very small financial consequences*	*the evaluation has some financial consequences*	*the evaluation has financial consequences that are clearly perceivable*	*the evaluation has large financial consequences*
O	O	O	O	O

6.11 How important is your personal presence as a supervisor, advisor, informer etc. for the quality of the performance of your employees?

if I am not present, performance quality is bad	*if I am not present, performance quality suffers considerably*	*if I am not present, performance quality suffers*	*if I am not there, performance suffers slightly*	*my personal presence has little or no influence on performance quality*
O	O	O	O	O

6.12 Do official rules exist in your organization concerning the number of employees that have to be evaluated positively, negatively or neutrally?

- O Yes, those rules exist
- O There are no official rules, but in practice there are target percentages
- O No, those rules do not exist at all

6.13 How do you think your employees feel about the extent to which you meddle in the way they execute their tasks? *(Note: This question is aiming at determining the opinion of your employees; this opinion is not necessarily correct.)*

they would prefer to see me more involved	*a little more involvement would be appreciated*	*they are content with the situation as it is*	*a little less involvement would be appreciated*	*they would prefer to see me less involved*
O	O	O	O	O

6.14 To what extent are you informed earlier than your employees about matters going on in your organizational unit?

in this organizational unit I am the first to know everything	*it happens only occasionally that someone else knows something earlier than I do*	*on details others may be informed earlier, but I am the first to know essential matters*	*on essential matters I am usually informed first, on matters of details only occasionally*	*generally my employees are informed earlier than I am*
O	O	O	O	O

7 Comparison of results

How important is each of the following points of reference for evaluating the performance of your organization or organizational unit?

	very important	*important*	*somewhat important*	*unimportant*	*very unimportant*
7.1 Comparison with the budget	O	O	O	O	O
7.2 Comparison with the maximal attainable	O	O	O	O	O
7.3 Comparison with results in the last period	O	O	O	O	O
7.4 Comparison with the results of other organizational units within the own organization	O	O	O	O	O
7.5 Comparison with results of other organizational units of competing organizations (“benchmarking”)	O	O	O	O	O

7.6 How often are targets revised during a budget period?

hardly ever	*seldom*	*regularly*	*very regularly*	*almost always*
O	O	O	O	O

8 Propositions about your organizational unit

If you look at the way you manage your organizational unit, to what extent do you agree with the following propositions:

		strongly agree	*agree*	*neutral*	*disagree*	*strongly disagree*
8.1	Simple performance measures suffice because I know what is going on in my organizational unit	O	O	O	O	O
8.2	I only examine the bottom-line of financial results	O	O	O	O	O
8.3	If you already are going to miss your target, you can better do it to a large extent, in order to make results in later periods look better	O	O	O	O	O
8.4	By hiring the right personnel, evaluation of performance is relatively unimportant	O	O	O	O	O
8.5	By taking care of a good culture in my organizational unit, I can depend upon people doing their job as best as they are able to which makes performance measurement essentially superfluous	O	O	O	O	O
8.6	You only notice whether customers are satisfied by monitoring the primary process	O	O	O	O	O
8.7	Of financial reports, the items above the bottom-line are mainly indicative of developments or trends	O	O	O	O	O
8.8	I do not have to look at the numbers accurately, as I regularly carry out a more elaborate evaluation	O	O	O	O	O
8.9	I "manage by exception", as long as performance is satisfactory, people can do things their own way	O	O	O	O	O
8.10	The financial reports I receive, contain the same information as is used for external reporting purposes (the annual report)	O	O	O	O	O
8.11	The way I evaluate my employees is similar to the way my supervisors evaluate me	O	O	O	O	O
	O not applicable					
8.12	The most recent management report is always within hands' reach	O	O	O	O	O
8.13	If it were not obligatory, I would not make formal evaluations of my subordinates	O	O	O	O	O
	O not applicable					
8.14	If the results of the performance measurement system do not match your expectations, you should adjust the performance measurement system	O	O	O	O	O

		strongly agree	*agree*	*neutral*	*disagree*	*strongly disagree*
8.15	The final evaluation of an employee is a formality. At the moment the evaluation report is finished, the employee already knows whether he/she will be evaluated positively or negatively	O	O	O	O	O
8.16	I occasionally have found myself in a situation in which I had to neglect long term opportunities as I had to reach my targets for the current period first	O	O	O	O	O

9 Performance of the organizational unit

In relation to other comparable organizations or organizational units, how did your unit -in your opinion- rate on each of the following factors during the past year?

		far below average	*somewhat below average*	*about average*	*somewhat above average*	*far above average*
9.1	The quantity or amount of work produced	O	O	O	O	O
9.2	The quality or accuracy of work produced	O	O	O	O	O
9.3	The number of innovations or new ideas introduced	O	O	O	O	O
9.4	Reputation for work excellence	O	O	O	O	O
9.5	Attainment of unit productions or service goals	O	O	O	O	O
9.6	Efficiency of unit operations	O	O	O	O	O
9.7	Morale of personnel	O	O	O	O	O
9.8	Development of revenues (if applicable)	O	O	O	O	O
	O not applicable					
9.9	Development of profits (if applicable)	O	O	O	O	O
	O not applicable					

10 Usage of the system

The following questions are not about the management reports as a whole, but only about the Balanced Scorecard (BSC).

		strongly agree	*agree*	*undecided*	*disagree*	*strongly disagree*
10.1	I use the BSC to help me make explicit the reasons for my decisions	O	O	O	O	O
10.2	I use the BSC to improve the effectiveness and efficiency of the decision process	O	O	O	O	O
10.3	I use the BSC to check my thinking against the data	O	O	O	O	O
10.4	My organizational unit and I use the BSC to co-ordinate our activities	O	O	O	O	O

		strongly agree	*agree*	*undecided*	*disagree*	*strongly disagree*
10.5	I use the BSC to co-ordinate activities with others in 1	O	O	O	O	O
10.6	I use the BSC to communicate with people who report to me	O	O	O	O	O
10.7	I use the BSC to communicate with people I report to	O	O	O	O	O
10.8	I use the BSC to make the decision process more rational	O	O	O	O	O
10.9	I use the BSC to deal more strategically with internal and/or external customers	O	O	O	O	O
10.10	I use the BSC to more creatively serve customers	O	O	O	O	O
10.11	I use the BSC to monitor my own performance	O	O	O	O	O
10.12	I use the BSC to plan my work	O	O	O	O	O
10.13	I use the BSC to serve internal and/or external customers	O	O	O	O	O
10.14	I use the BSC to decide how to best approach a problem	O	O	O	O	O
10.15	I use the BSC to get feedback on job performance	O	O	O	O	O
10.16	I use the BSC to help me justify my decisions	O	O	O	O	O
10.17	I use the BSC to improve the quality of customer service	O	O	O	O	O
10.18	I use the BSC to communicate with other people in my organizational unit	O	O	O	O	O
20.19	I use the BSC to analyze why problems occur	O	O	O	O	O
10.20	I use the BSC to help me explain my decisions	O	O	O	O	O
10.21	I use the BSC to make sense out of data	O	O	O	O	O
10.22	I use the BSC to exchange information with internal and/or external customers	O	O	O	O	O

11 Propositions

Hereinafter 35 propositions concerning behaviors are stated. Could you indicate for each of them whether you show that behavior never, sometimes, often or always?

		Never	*sometimes*	*often*	*always*
11.1	I take rational decisions, even if my feelings tell me to take alternative ones	O	O	O	O
11.2	With many problems, I am not interested in what the causes were; they just have to be solved immediately!	O	O	O	O
11.3	I encourage others to visit me for support, advice or encouragement	O	O	O	O
11.4	I hang on to successful approaches as long as possible, even when I know the circumstances are changing.	O	O	O	O
11.5	When trying to understand a problem, I work it out to identify its different aspects	O	O	O	O

		Never	*sometimes*	*often*	*always*
11.6	When I need to judge a situation, I look at the available information	O	O	O	O
11.7	I share the credit with everyone who contributed to a success, even if I was the main co-ordinator responsible	O	O	O	O
11.8	I avoid listening to other persons' point of view when I have already formed my own opinion	O	O	O	O
11.9	After I have given a presentation, people ask me to give further clarifications	O	O	O	O
11.10	When I want to solve a complex problem, I try to redefine it into concepts that are recognizable to me	O	O	O	O
11.11	When performing a task that is new to me, I first investigate how it is related to other tasks that I performed before	O	O	O	O
11.12	When someone is speaking to me (or to an audience that I am in), I am able to instantly stop thinking about anything else and concentrate on what is being said	O	O	O	O
11.13	When facing a problem, I immediately take a decision, without first considering a number of possible alternatives	O	O	O	O
11.14	I can get so intensively focused on specific details, that I forget the big picture	O	O	O	O
11.15	I repeat something that someone says to me in my own words to ensure that I have understood the message correctly	O	O	O	O
11.16	I have a variety of writing styles from which I choose the most appropriate for the reader that I am addressing my correspondence to	O	O	O	O
11.17	I only express my opinion or expectations when I expect people to accept them	O	O	O	O
11.18	I encourage others in a group to work together	O	O	O	O
11.19	I combine relevant information and concepts from several very different sources to get a clear picture of the situation	O	O	O	O
11.20	My "intuition" and feelings guide the decisions that I finally make	O	O	O	O
11.21	I consciously consider several different approaches before tackling a problem	O	O	O	O
11.22	I am quite selective when it comes to sharing my information or knowledge with others	O	O	O	O
11.23	At business meetings, I pursue meeting people that are newly present	O	O	O	O
11.24	On issues that relate to my work, I decide on my own, even if I am part of a group	O	O	O	O
11.25	I am uncomfortable when I have to handle several things at once	O	O	O	O
11.26	I adapt quickly to changes in my work situation	O	O	O	O

		Never	*sometimes*	*often*	*always*
11.27	When I hear that someone else in my team needs resources that I possess, I immediately offer to share some of these resources with him or her	O	O	O	O
11.28	When confronted with an unexpected outcome, I make a list of sequential events that might have caused it	O	O	O	O
11.29	I look at issues from different interest group perspectives	O	O	O	O
11.30	I understand new things by seeing how they fit with what I already know	O	O	O	O
11.31	I modify my approaches in accordance to changing circumstances	O	O	O	O
11.32	I try to predict the potential consequences and future courses of events resulting from implementation of alternative courses of action	O	O	O	O
11.33	I pay particular attention to others' feelings when expressing myself	O	O	O	O
11.34	I don't pay attention to the layout of my reports: it is the content that counts	O	O	O	O
11.35	I re-assign members of a group to different tasks/responsibilities to see what they are good at	O	O	O	O

12 Questions and comments

12.1 If you have any questions or comments, please use the space underneath.

Thank you for your co-operation!

APPENDIX I: MANAGEMENT MODELS

To obtain meaningful results, hypothesis 1 (Specific management styles are related to specific types of performance management system use) should be further specified. For this, several management models that are described in the literature were examined. These management models are in general aiming to map, identify, and subsequently explain the factors that influence the effectiveness of managers' leadership. It is interesting to hypothesize on the basis of these theoretical models which specific management styles give the highest chance on which specific types of performance management system use. This theoretical profile of a performance management system user is assembled by trying to match the descriptions of the management models with the performance management system use factors described in Chapter 6[11], and then deriving the common denominator.

The first management model discussed here is that of Mintzberg, who distinguished eight types of managers (Goedmakers et al., 1994).[12] In Exhibit I.1, these eight types are described and juxtaposed to the performance management system uses and management styles that seem to fit best the descriptions of Mintzberg's manager types. This comparison is made on the basis of the performance management system use factors and management style factors described in Chapter 6.

Manager Type	Description	PMS	MS
Contact person	This manager spends a great deal of time outside of the organization, who tries to win orders or obtain exclusive information, who endeavors to strengthen the reputation of the organization.	CO	C
Entrepreneur	This manager is continuously looking for new possibilities and opportunities for the organization, and implements many changes in the organization.	DS	FA
Expert	This manager is an expert and advisor in a particular area.	DS	AT, CT
Insider	This manager is concerned with managing the internal operations of the organization.	WI	TC
New manager	This manager is new in his function and therefore is mainly concerned with obtaining information and building a relations network.	CO	C

[11] Performance management system use factors: Decision Support (DS), Work integration (WI), Communication (CO). Management style factors: Analytical Thinking (AT), Conceptual Thinking (CT), Teamwork & Cooperation (TC), Flexibility & Adaptation (FA), and Communication (C).

[12] Summary given in: Goedmakers, M.A., W. Kamminga, G.J.A. Visser (1994), *De eigenschappen van effectieve managers* [transl. 'The characteristics of effective managers'], Thema Uitgeverij Schouten en Nelissen, which is based on: Mintzberg, H. (1973), *The nature of managerial work*, Prentice Hall; Mintzberg, H. (1983), *Power in and around organizations*, Prentice Hall; Mintzberg, H. (1983), *Structures in fives*, Prentice Hall International.

Political manager	This manager spends a great deal of time outside of the organization in order to reconcile the political forces on the organization.	CO	C
Real-time manager	This manager is also concerned with managing the internal operations of the organization, but mainly focuses on dealing with disturbances and problem solving.	WI	FA, AT
Team manager	This manager is also concerned with managing the internal operations of the organization, but mainly focuses on creating and maintaining an effective team.	WI	TC

Exhibit I.1: Juxtaposing Mintzberg's manager types with the performance management system use factors (PMS) and management style factors (MS)

Quinn et al. (1990) distinguish several leadership roles and links these with competencies needed by a manager to excel in a particular leadership role. These leadership roles are seen as a function of the orientation of the manager (internal or external) and the prevailing control style of the manager (flexible versus tight control). The resulting combinations are given labels as can be seen in Exhibit I.2.

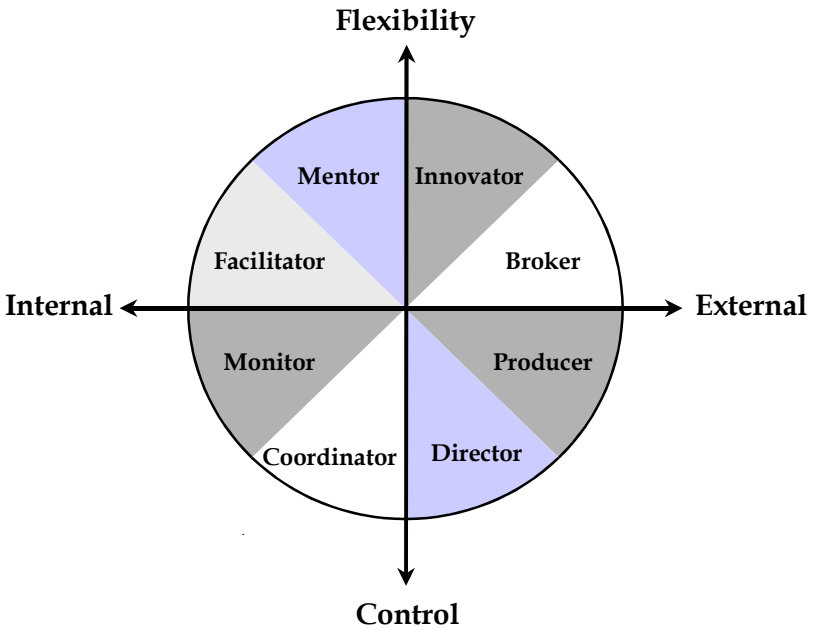


Exhibit I.2: Leadership roles in Quinn's model

Exhibit I.3 gives a short description of each leadership role by giving the main characteristics of each role and the main competencies that a manager needs to be able to fulfil this role. A comparison is made of the performance management system use factors that would probably best support a particular leadership role, and of the management style factors that seem to fit best the descriptions of the required competencies.

Leadership Role	Characteristics	PMS	Competencies Required	MS
Mentor	▪ Has high self-awareness ▪ Focuses on developing subordinates ▪ Is approachable and caring	WI	▪ Understanding of self and others ▪ Communicating effectively ▪ Developing subordinates	C
Facilitator	▪ Supports and develops the team ▪ Communicates and follows up on team goals ▪ Promotes team spirit and teamwork ▪ Deals with conflicts	WI	▪ Building teams ▪ Using participative decision making ▪ Managing conflict	TC, C
Monitor	▪ Knows what is going on in the organization ▪ Focuses on details, control and analyses ▪ Installs information and control systems	WI	▪ Reducing information (overload) ▪ Analyzing information through critical thinking ▪ Presenting information, writing effectively	AT, CT
Coordinator	▪ Manages internal and external projects ▪ Develops working procedures and routines ▪ Manages contacts between divisions, groups and departments	WI	▪ Managing schedules ▪ Organizing	C
Director	▪ Defines goals and strategies for the business ▪ Plans the business ▪ Defines roles and responsibilities	DS	▪ Visioning, planning and goal setting ▪ Designing and organizing ▪ Delegating effectively	CT, C
Producer	▪ Creates guidelines and procedures ▪ Focuses on issues, based on short-term and long-term goals ▪ Uses time efficiently	WI	▪ Orienting on task and result ▪ Taking responsibility ▪ Managing time and stress	FA
Broker	▪ Organizes ▪ Maintains and develops external relations ▪ Negotiates and makes deals, both internally and externally	DS	▪ Building and maintaining a power base ▪ Negotiating agreement and commitment ▪ Presenting ideas	C
Innovator	▪ Enables changes ▪ Manages changes and resistance to changes ▪ Creates visions	WI	▪ Thinking creatively ▪ Creating change ▪ Living with change	FA, C

Exhibit I.3: Juxtaposing Quinn's leadership roles with the performance management system use factors (PMS) and management style factors (MS)

An important stream in the research about leadership models is formed by the contingency or situational leadership theories. These theories state that leadership styles depend on the circumstances of the leader and his or her organization. Since these circumstances will change, different leadership styles and, therefore, different competencies are needed. This means that either the manager is able to adapt his or her leadership style or that different managers are required at different times during the life cycle of the organization. Reddin (1977) and Hersey and Blanchard (1982) have developed models, in which they included the dimensions of task orientation and relation orientation as aspects of situational leadership (Exhibit I.4).

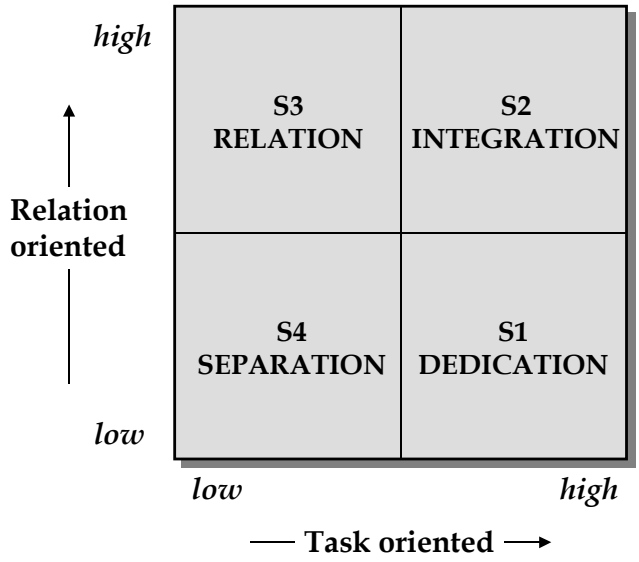


Exhibit I.4: The four leadership styles
(adapted from Reddin, 1977, and Hersey and Blanchard, 1982)

In Exhibit I.5, the performance management system use factors and management style factors are juxtaposed to the four leadership styles given in Exhibit I.4.

Kolb et al. (1984) state that successful managers distinguish themselves not so much based on special knowledge or skills, but on their ability to deal flexibly with the continuously changing demands of their job and career. This means that these managers possess the skills to explore new possibilities and to learn from past successes and mistakes. Kolb et al. formulated a model that looked at the way managers learn and the resulting learning and managing styles, resulting in four types of manager. In Exhibit I.6, descriptions of these types are given with an assessment of the performance management system use factors and management style factors that best seem to fit Kolb's manager types.

Leadership Style	Description	PMS	MS
S1: Dedication	Priority is given to execution of the work. Which work has to be done and how it has to be done is stipulated by the manager. Control on the quality of work can result in reward or punishment. This style is appropriate for certain types of work in crisis situations and when inexperienced workers are involved.	DS, WI	FA
S2: Integration	Focus lies on teamwork and internal interactions. Which work has to be done is stipulated by the manager. How it has to be done is stipulated by the team. This style is appropriate for managing teams that are highly interdependent.	WI	TC, C
S3: Relation	Priority is given to people. Which work has to be done is discussed between manager and employees. How it has to be done is stipulated by the manager. Ideas and input from employees is valued and rewarded. This style is appropriate for certain types of training and coordination work.	CO	FA, C
S4: Separation	Focus lies on procedures. During internal interactions, logic and rational are leading. This style is appropriate when dealing with professionals who can decide what to work on them themselves, or in the case of highly routine work that is surrounded with strict procedures.	WI	AT, CT

Exhibit I.5: Juxtaposing the leadership styles of Reddin/Hersey and Blanchard with the performance management system use factors (PMS) and management style factors (MS)

Manager Type	Description	PMS	MS
Converger	These managers are proficient at problem solving, making decisions and implementing ideas. They are not very emotional and rather work with objects than with people.	DS	AT
Diverger	These managers are proficient at thinking about and visualizing alternatives, and looking at a situation from different angles. They are interested in people, and are emotional and imaginative.	CO	CT, C
Assimilator	These managers are proficient at inductive reasoning, creating new theoretical models and abstract concepts. They are less people oriented and value more a precise and logical theoretical basis than a practical solution.	DS	CT
Accommodator	These managers are proficient at the execution of the planning and its related tasks. They look for new experiences, new opportunities and new risks, and solve problems by "trial and error". They are flexible adapters to new circumstances.	WI	FA

Exhibit I.6: Juxtaposing Kolb's manager types with the performance management system use factors (PMS) and management style factors (MS)

According to Hope and Fraser (1999), the current trend is that organizations move from a functional to a process orientation with increasing emphasis on cross-functional teams and teamwork and less emphasis on hierarchy. Research done by Johnston and Fitzgerald (2000) shows that a team-based approach to management encourages cross-fertilization of ideas and promotes innovation. Euske et al. (1993) state that when an organization adopts a process orientation, the need to develop and trust individuals within the organization takes on added emphasis. This takes the shape of an increased emphasis on training, cooperation, flexibility, and teamwork. In these types of environments, the performance management system is used to strengthen the exchange of information in a team environment about decisions made, reasons for these decisions, critical activities to be performed and achieved results (Armstrong and Baron, 1998). Kloot (1997) remarks that true participative decision making and employee empowerment assist the learning organization and that these processes should be set in place to encourage participation. This will refocus performance measurement to lower levels in the organization, with employees taking responsibility for their decisions and being held accountable for the outcomes. Birnberg (1998) warns that cooperation and trust take on a greater importance in both a turbulent environment and in a setting where the decision-making system is group oriented, rather than in a more predictable environment. This is due to the need to share information about environment changes, so that all the members of the group concerned with that phase of the organization's activities are informed. Euske et al. (1993) see a trend in which the performance measurement process appears to be refocusing from results to the process itself. It appears that when an organization adopts a process orientation, the need to develop and trust individuals within the organization takes on added emphasis. Additionally, increased interaction of personnel in the operating core with each other and with individuals who are not part of the core appear to be leading to an increased emphasis on training, cooperation, flexibility, and teamwork. Taking all this together gives us a predominant performance management system use of Work Integration and Communication, which is matched with the management style Teamwork & Cooperation.

Exhibit I.7 summarizes the various theoretical relationships between performance management system use factors and management style factors as derived from the literature examined.

Management Style Factors	PMS	Management Model (Source)
Analytical Thinking (AT)	DS	Mintzberg, Kolb
	WI	Mintzberg, Quinn, Reddin/Hersey and Blanchard
	CO	-
Conceptual Thinking (CT)	DS	Mintzberg, Kolb, Quinn
	WI	Quinn, Reddin/Hersey and Blanchard
	CO	Kolb
Flexibility & Adaptation (FA)	DS	Mintzberg, Reddin/Hersey and Blanchard
	WI	Mintzberg, Kolb, Quinn, Reddin/Hersey and Blanchard
	CO	Reddin/Hersey and Blanchard
Teamwork & Cooperation (TC)	DS	-
	WI	Mintzberg, Quinn, Reddin/Hersey and Blanchard, Other
	CO	Other
Communication (C)	DS	Quinn
	WI	Quinn, Reddin/Hersey and Blanchard
	CO	Mintzberg, Kolb, Reddin/Hersey and Blanchard

Exhibit I.7: Theoretical relationships between management style factors, performance management system use factors (PMS), and various management models

Dutch Summary

Nederlandstalige samenvatting
van

DE ROL VAN GEDRAGSFACTOREN BIJ SUCCESVOLLE IMPLEMENTATIE
EN GEBRUIK VAN PRESTATIEMANAGEMENTSYSTEMEN

Introductie van het onderzoek

Prestatiemanagementsystemen worden gedefinieerd als "formele, op informatie gebaseerde routines en procedures die door managers worden gebruikt om organisationele activiteiten te ondersteunen of te veranderen" (naar Simons, 2000). Prestatiemanagementsystemen verschaffen financiële en niet-financiële informatie voor de besluitvorming en het ondernemen van actie door managers. Het vastleggen, analyseren and distribueren van prestatie-informatie maakt deel uit van een organisatiecyclus waarin deze activiteiten worden uitgevoerd op vooraf vastgestelde tijden volgens een vooraf vastgestelde handelswijze. Prestatiemanagementsystemen zijn speciaal ontworpen voor gebruik door managers.

Volgens Neely (2000) bestaat er een natuurlijke evolutiecyclus voor de ontwikkeling van de theorie en praktijk van prestatiemanagementsystemen. Aan het begin van deze cyclus waren managers bezorgd dat ze de verkeerde zaken maten (de jaren tachtig en begin jaren negentig van de vorige eeuw). Na de vaak moeizame invoering van nieuwe en alternatieve prestatiemanagementsystemen, zoals de *balanced scorecard* (gedurende de jaren negentig), buigen managers zich nu over de vraag wat te doen met de data die de nieuwe systemen leveren (eind jaren negentig en begin deze eeuw). De belangrijkste reden voor managers om die data te gebruiken is volgens Zairi en Jarrar (2000) dat deze helpt het gedrag van managers op lagere organisatieniveaus en medewerkers te beïnvloeden. Om hierin succesvol te kunnen zijn moeten managers goed inzicht hebben in de menselijke natuur en het gedrag van mensen in een organisatie. Simons (2000) maakt een aantal veronderstellingen met betrekking tot menselijke activiteiten in een organisatie: (1) mensen willen bijdragen aan een organisatie waarop ze trots kunnen zijn; (2) mensen weten het verschil tussen goed en fout en kiezen er meestal voor het goede te doen; (3) mensen willen presteren, zelfs bij afwezigheid van externe prikkels (zoals geld, promotie, erkenning) zullen ze zich zelf toch vaak persoonlijke doelen stellen; (4) mensen houden ervan nieuwe dingen te doen, ze willen experimenteren met nieuwe technologieën en nieuwe manieren van werken; en (5) mensen willen competent zijn, door een taak goed uit te voeren kunnen ze hun kennis en vaardigheid tonen en bevrediging halen uit hun competentie. Simons concludeert dat mensen graag een goede prestatie neerzetten.

Prestaties kunnen worden beschouwd als het resultaat van organisatorische en menselijke activiteiten. Oorspronkelijk werden prestatiemaatstaven als representaties van deze prestaties

gebruikt; direct verband tussen het prestatiemanagementsysteem, de menselijke natuur en de organisatieresultaten werd niet gelegd. Deze leemte werd door Argyris (1952) en Simon et al. (1954) opgevuld, die het menselijke gedrag in relatie tot het gebruik van prestatiemanagementsystemen bestudeerden, en daarbij vooral keken naar het budgetteringsproces. Beide onderzoekers concludeerden dat het budgetteringsproces geassocieerd bleek te zijn met problemen ten aan zien van intermenselijke relaties, zoals de verwijdering tussen management en medewerkers, het ontstaan van conflicten tussen organisatieonderdelen, en spanningen bij medewerkers tijdens de uitvoering van hun taken. Hun conclusies waren een aanzienlijke verwijdering van de meer traditionele mechanistische blik op prestatiemanagement die tot dan toe opgang deed.

Tegenwoordig krijgt het menselijke gedrag meer aandacht in de literatuur dan voorheen. Simons (2000) stelt dat prestatiemanagementsystemen niet ontworpen kunnen worden zonder rekening te houden met het menselijk gedrag. Holloway et al. (1995) beargumenteren dat een succesvolle invoering van prestatiemanagement vooral afhangt van begrip van en tegemoetkoming aan het menselijk gedrag. Bij nadere bestudering van de literatuur, blijkt dat veel onderzoeken zich nog steeds richten op het budgetteringsproces. Hartmann (2000) roept dan ook op om te onderzoeken of persoonlijkheidskenmerken die gerelateerd zijn aan individuele voorkeuren voor risico en onzekerheid invloed hebben op het gedrag van managers en hun reacties op het budgetteringsproces. Vagneur and Peiperl (2000) pleiten voor onderzoek van de individuele psychologische reacties op prestatiebeoordelingen, waarbij rekening moet worden gehouden met recent onderzoek op gebied van psychologie, *organizational behavior*, *behavioral accounting* en systeemtheorie. Daarnaast heeft veel onderzoek op het gebied van prestatiemanagement zich met name gericht op de technische details met betrekking tot de implementatie van een prestatiemanagementsysteem (Martins, 2000). De laatste jaren zijn veel organisaties overgegaan tot de implementatie van prestatiemanagementsystemen die gebaseerd zijn op kritische succesfactoren (KSF'en) en prestatie-indicatoren (PI'en). Een veelvoorkomende systeem is de *balanced scorecard* (BSC) (Kaplan en Norton, 1996). Ondanks toenemende ervaring met deze systemen valt er nog veel te leren over de factoren die de effectieve toepassing van KSF'en, PI'en en de BSC beïnvloeden (Vosselman, 1999). Met name de invloed van gedragskenmerken van managers op het gebruik van een prestatiemanagementsysteem is tot nu toe onderbelicht gebleven in de wetenschappelijke en professionele literatuur (Vagneur and Peiperl, 2000; Krause, 2000).
Twee recente onderzoeken naar gedragskenmerken rond het gebruik van prestatiemanagementsystemen beoogen de onderzoeksleemte te vullen. Lipe en Salterio (2000) vonden dat cognitieve beperkingen van managers ervoor kunnen zorgen dat een organisatie geen optimaal rendement haalt uit haar prestatiemanagementsysteem, en dat cognitieve verschillen tussen managers ervoor kunnen zorgen dat deze het prestatiemanagementsysteem op verschillende manieren gebruiken. Malina en Selto (2000) vonden dat positieve resultaten veroorzaakt door het gebruik van een prestatiemanagementsysteem vooral bepaald werden door de effectiviteit waarmee het systeem werd toegepast als management control hulpmiddel, en niet door de mate waarin het systeem werd toegepast als communicatiemiddel. De positieve resultaten kwamen tot uitdrukking in betere strategische afstemming van medewerkers en hogere motivatie van medewerkers, wat aangeeft dat er relaties bestaan tussen het ontwerp van het prestatiemanagementsysteem, het gebruik ervan voor management control, het gedrag van managers en medewerkers en organisatieprestaties.

In deze dissertatie werd het onderzoek naar gedragsaspecten met betrekking tot invoering en gebruik van prestatiemanagementsystemen uitgebreid met de volgende onderzoeksvraag: *Welke gedragsfactoren dragen bij tot succesvolle invoering en gebruik van een prestatiemanage-*

mentsysteem? Er is sprake van een succesvol prestatiemanagementsysteem wanneer het systeem dagelijks door managers wordt gebruikt. De onderzoeksvraag werd beantwoord door het bestuderen van drie organisaties die een prestatiemanagementsysteem hebben ontworpen en ingevoerd. Het onderzoek beoogde die gedragsfactoren te identificeren die van invloed zijn op het succesvol ontwerpen en invoeren van een dergelijk systeem. In de literatuur worden vele suggesties gedaan voor gedragsfactoren die potentieel van invloed zijn. Voorbeelden zijn: "Managers accepteren de noodzaak voor prestatiemanagement" en "Managers accepteren de promotor".

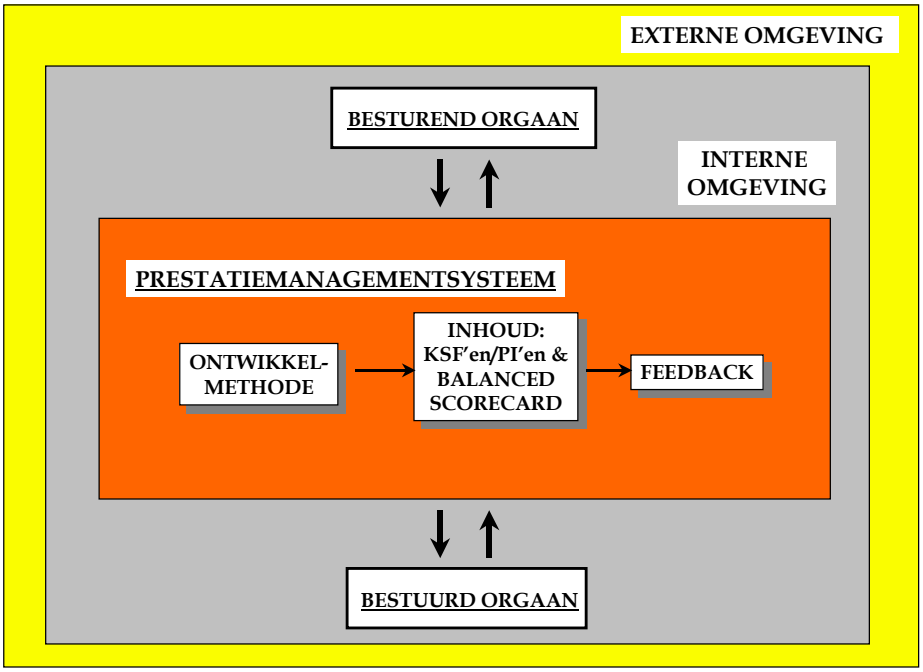
Een belangrijk onderdeel van het promotieonderzoek was, naast een uitgebreid literatuuronderzoek, het uitvoeren van case study onderzoek. Er werden bezoeken afgelegd bij drie organisaties die ervaring hadden met KSF'en, PI'en en de BSC om antwoorden te vinden op de volgende vragen:

- Waarom heeft de organisatie een prestatiemanagementsysteem dat gebaseerd is op KSF'en, PI'en en de BSC geïntroduceerd?
- Onder welke omstandigheden besloot de organisatie het prestatiemanagementsysteem te introduceren?
- Hoe heeft de organisatie haar medewerkers betrokken bij het ontwerpen van het prestatiemanagementsysteem?
- Hoe ervaarden de gebruikers het werken met het nieuwe prestatiemanagementsysteem en met de KSF'en, PI'en en de BSC?
- Welke communicatiemiddelen werden toegepast om het prestatiemanagementsysteem te introduceren?
- Hoe is de verantwoordelijkheidstelling voor de PI'en vorm gegeven?

Resultaten van fase I

In de literatuur worden veel gedragsfactoren genoemd die mogelijk van invloed zijn op succesvolle implementatie en regelmatig gebruik van een prestatiemanagementsysteem. Deze factoren zijn gegroepeerd en gerangschikt in een zogenoemd classificatieschema (figuur A).

Het classificatieschema werd verkregen door het koppelen van de voorwaarden voor effectieve control (De Leeuw, 1990) met de prestatiemetingcontrolcyclus (Van Tuijl et al., 1995). Voor effectieve control hebben het besturend orgaan (de superieur van de manager) en het bestuurd orgaan (de manager zelf) een prestatiemanagementsysteem nodig. Met een dergelijk systeem krijgt het besturend orgaan informatie over de prestaties van het bestuurd orgaan, en krijgt het bestuurd orgaan informatie over het eigen presteren. De interne en externe omgevingen waarin het besturend en het bestuurd orgaan opereren beïnvloeden de effectiviteit van control. Het ontwikkelmethode-gedeelte van het prestatiemanagementsysteem beschrijft de manier waarop KSF'en, PI'en en de BSC ontwikkeld worden. Het inhoudsgedeelte geeft de kwaliteitscriteria waaraan KSF'en, PI'en en de BSC moeten voldoen om relevant te kunnen zijn voor zowel het besturend als het bestuurd orgaan. Het feedback-gedeelte van het systeem beschrijft de manier waarop informatie over KSF'en, PI'en en de BSC aan besturend en bestuurd orgaan wordt overgedragen.
Elk onderdeel van het classificatieschema werd onderverdeeld in sub-onderdelen. Voor elk sub-onderdeel werden in de literatuur gedragsfactoren geïdentificeerd waarmee ieder onderdeel van het classificatieschema mogelijk positief beïnvloed kon worden.



Figuur A: Classificatieschema voor gedragsfactoren

Voor het beantwoorden van de onderzoeksvraag werd case study onderzoek verricht bij drie Nederlandse organisatie: een non-profit organisatie, een profit organisatie en een organisatie die in de transitiefase van non-profit naar profit zat. Alle organisatie hadden ten tijde van het onderzoek uitgebreide ervaring met KSF'en en PI'en. Doel van het onderzoek was die gedragsfactoren te identificeren die de meeste invloed hadden op de implementatie en het gebruik van het prestatiemanagementsysteem bij de case study organisaties.
Een implementatieproject van een prestatiemanagementsysteem bestaat over het algemeen uit drie fasen: (1) de startfase, waarin de organisatie besluit tot de implementatie van een prestatiemanagementsysteem; (2) de ontwikkelfase, waarin KSF'en, PI'en en de BSC worden ontwikkeld; en (3) de gebruiksfase, waarin de organisatie het prestatiemanagementsysteem gaat gebruiken. Voor elke fase vond identificatie plaats van de gedragsfactoren die de meeste invloed hadden op een succesvolle afronding van een specifieke fase en van het gehele project. Ook werd bekeken welke fase de meeste invloed had op het gehele succes van het implementatieproject.
De onderzoeksresultaten toonden aan dat een organisatie specifiek aandacht moet besteden aan 18 gedragsfactoren. Daarnaast bleek dat de gebruiksfase de meeste invloed had op het succes van het prestatiemanagementsysteem. Een dergelijke relatie werd niet gevonden voor de start- en ontwikkelfasen. Dit betekent niet dat een organisatie in deze fasen geen aandacht hoeft te besteden aan de gedragsfactoren. De drie fasen worden volgtijdelijk uitgevoerd, wat betekent dat de eerste twee fasen zo goed mogelijk moeten worden doorlopen voordat de gebruiksfase gestart kan worden. De gebruiksfase heeft de meeste invloed op het succes van het prestatiemanagementsysteem omdat deze fase, in tegenstelling tot de start- en ontwikkelfasen, een continu karakter heeft. Hierdoor moeten de gedragsfactoren die van belang zijn voor deze fase voortdurend in de gaten worden gehouden om er zeker van te kunnen zijn dat het prestatiemanagementsysteem regelmatig gebruikt wordt. De aandacht die een organisatie

besteed heeft aan de gedragsfactoren die van belang zijn voor de start- en ontwikkelfasen vond daarentegen in het verleden plaats, en verdwijnt daardoor langzamerhand buiten beeld.

In een van de case studies werden twee vergelijkbare afdelingen van één organisatie bestudeerd. De resultaten voor de start- en ontwikkelfasen waren voor beide afdelingen hetzelfde. Echter, het resultaat voor de gebruiksfase was positief voor de ene afdeling en negatief voor de andere afdeling. Er was een sterke aanwijzing dat de houding van het afdelingshoofd (het bestuurd orgaan) ten opzichte van het prestatiemanagementsysteem de doorslaggevende factor was voor het verschil in resultaat tussen beide afdelingen. Het gebrek aan aandacht voor prestatiemanagement van de ene manager tegenover de speciale focus die de andere manager daarvoor had, wees erop hoe een manager over prestatiemanagement denkt belangrijk is voor het al dan niet gebruiken van een prestatiemanagementsysteem. Deze verschillende gezichtspunten kunnen mogelijk worden verklaard door verschillen in de managementstijlen van beide managers. Deze overweging wordt ondersteund door de bevindingen van zowel Malina en Selto (2000) als Lipe en Salterio (2000). Omdat cognitieve aspecten en persoonlijke vaardigheden van managers als ook soorten van gebruik van een prestatiemanagementsysteem niet waren meegenomen in fase I van het onderzoek, werd besloten een tweede fase te starten. Doel van fase II was om de relatie tussen verschillende soorten van gebruik van een prestatiemanagementsysteem en verschillende managementstijlen te onderzoeken. Fase I van het onderzoek richtte zich op de organisatie en haar omgeving en strategie, die allemaal relatief kortetermijnaspecten zijn. Fase II richtte zich op de persoonlijke karakteristieken van individuen die zich in verschillende situaties bevinden (verschillende organisaties), dit zijn juist langetermijnaspecten.

Resultaten van fase II

Het doel van fase II was om die managementstijlen te identificeren die het regelmatig gebruik van een prestatiemanagementsysteem het meest beïnvloeden (Marchand et al., 2000; Gelderman, 1998d). Na bestudering van de literatuur werden verschillende soorten van gebruik van prestatiemanagementsystemen geïdentificeerd, en werden verschillende hypothesen over managementstijlen en de soorten van gebruik van prestatiemanagementsystemen opgesteld. Deze hypothesen werden bij elf organisaties getest met behulp van een zelf samengestelde vragenlijst. Op basis van het aantal hypothesen dat na het testen *niet* verworpen kon worden, kon geconcludeerd worden dat specifieke managementstijlen zowel de soorten van gebruik als de mate van gebruik van een prestatiemanagementsysteem beïnvloeden, alhoewel niet altijd op de manier die in de literatuur werd beschreven. De resultaten toonden ook aan dat het gebruik van een prestatiemanagementsysteem de productiviteit en algehele kwaliteit van werken van een organisatie verhoogt. Met name de managementstijl 'flexibel zijn en het vermogen tot aanpassen aan verschillende organisationele omstandigheden bezitten' was positief gerelateerd aan de kwaliteit van het geleverde werk, en de managementstijl 'graag in teams werken en samenwerken met anderen' was positief gerelateerd aan de productiviteit. Op basis van fase II kan geconcludeerd worden dat verschillen in soorten van gebruik en mate van gebruik van een prestatiemanagementsysteem en in organisatieresultaten (tenminste gedeeltelijk) verklaard kunnen worden door verschillen in managementstijl. Zoals De Smet et al. (2001) het uitdrukken: "De manager bepaalt inderdaad het verschil!"
Op grond van de bevindingen kan worden geconcludeerd dat verder onderzoek naar managementstijlen essentieel is om het gebruik van het prestatiemanagementsysteem in de organisatie te versterken en daardoor de resultaten van de organisatie te verbeteren.

About the Author

Antonie Adriaan (André) de Waal was born on June 11, 1960 in Rotterdam, the Netherlands. In 1978, he started his study of Chemistry at Leiden University and graduated for his Master's degree in 1983. From 1984 to 1985 he studied Business Administration (MBA) at Northeastern University in Boston, USA.

After his studies, André started his professional career at Andersen, where he worked from 1986 to 1998 as a consultant and from 1998 to 2001 as a partner. As a consultant, he was engaged in selection and implementation of production, logistic, financial, and management reporting software packages, performing benchmark studies, and designing logistic concepts and information technology infrastructures. He has specialized in developing and implementing performance management systems that are based on critical success factors, key performance indicators, and the balanced scorecard.

In 2002 he has joint as a partner with Holland Consulting Group, which is based in Amsterdam. Here he continues to focus on performance management projects. André has published over forty articles and eight books on the topic of performance management, among which *Power of Performance Management: How Leading Companies Create Sustained Value* (John Wiley & Sons, 2001).